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INSTITUTE OF SOCIAL ANTHROPOLOGY
PUBLICATION NO. 13

THE TAJIN TOTONAC

PART 1. HISTORY, SUBSISTENCE, SHELTER AND TECHNOLOGY

by

ISABEL KELLY
and
ANGEL PALERM

Prepared in Cooperation With the United States Department of State as a Project of the Interdepartmental Committee on Scientific and Cultural Cooperation

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LETTER OF TRANSMITTAL

Smithsonian Institution,
Institute of Social Anthropology,
Washington 25, D. C., June 16, 1950.

Sir: I have the honor to transmit herewith a manuscript entitled "The Tajín Totonac: Part 1. History, Subsistence, Shelter, and Technology," by Isabel Kelly and Angel Palerm, and to recommend that it be published as Publication Number 13 of the Institute of Social Anthropology.

Very respectfully yours,

Gordon R. Willey, *Acting Director.*

Dr. Alexander Wetmore,
Secretary of the Smithsonian Institution.

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PREFACE

Since 1944, the Institute of Social Anthropology, of the Smithsonian Institution, has been engaged in a program of active collaboration with the Escuela Nacional de Antropología e Historia, which is a branch of México's Instituto Nacional de Antropología e Historia. The scientific aims of this cooperative project are twofold: to train students of the Escuela, both in the classroom and in the field; and to add to our knowledge of the native and rural populations of Mexico.

As a result of joint endeavors in the field, three papers have appeared in the present series: Foster's monograph on the Tarascan-mestizo town of Tzintzuntzan, West's Tarascan geography, and Brand's study of Quiroga. Newman's Nahuatl and Otomí linguistic investigations still are mostly unpublished.

With the exception of the latter, all joint field work prior to 1947 was confined to the Tarascan area of Michoacán. In recent years, other individuals and institutions have concentrated on the Tarascan zone, with the result that knowledge of this area is comparatively full, at least in contrast to other parts of Mexico. Under the circumstances, it seemed both expedient and humane to relieve the long-suffering Tarascans from the pressure of a protracted open season; and, in 1947, with the concurrence of the Escuela, it was decided to shift the scene of field activities from highland Michoacán to the Gulf coast of Mexico, in the vicinity of Papantla, in the State of Veracruz.

This area had much to commend it. In the first place, it was the seat of the lowland Totonac, an important ethnic group whose culture was little known, except from mention in the early sources and from a scattering of more recent reports, chiefly by chance travelers.[1] In the second place, until a few years before, Papantla had been relatively inaccessible by modern routes of travel, and this comparative isolation might have made possible cultural survivals. In the third place, a new paved highway now connected Papantla with Mexico City, thus eliminating major problems of transport.

In January of 1947, a preliminary trip was made to Papantla, to decide upon specific headquarters. After considerable local inquiry and a brief inspection of several outlying Totonac communities, it was decided that the little settlement of Tajín was most promising. It was sufficiently far from Papantla—1.5 hours by horse or by foot, over a pretty poor trail—to be immune from noticeable urban taint; yet it was sufficiently close to permit easy communication. Its size—greatly underestimated both by informants and by the 1940 Federal census—seemed to promise the possibility of first-hand contact with most of the population.

But the deciding factor was that Tajín was the seat of the famous archeological site of that name. There, for many years, the Instituto Nacional de Antropología had maintained a Totonac caretaker and, from time to time, had undertaken excavations of major proportions. Accordingly, we assumed that the local population would not be unduly alarmed by a group of students which arrived under the aegis of the Instituto; and the caretaker, long accustomed to note-taking and to queries, might be able to explain our activities in innocuous terms to his neighbors. Moreover, with great amiability, the archeologist in charge of the zone, Ing. José García Payón, indicated his willingness to have the caretaker released to us, to serve as informant and local sponsor. With equal amiability, Arq. Ignacio Marquina, director of the Instituto, made the official arrangements necessary for this temporary transfer.

Early in February of 1947, we moved to Tajín, where we remained 4 months; and in 1948, we returned, again to remain from February through May. Unfortunately, our visits have been confined principally to the spring season—the most practical months, owing to the school calendar and to the excessive humidity which hampers foot travel during much of the year in the Papantla

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[1] There are two modern reports on the Totonac, neither based on field work: Melgarejo (1943), and Krickeberg. The latter study is confined largely to an inspection of archeological and historical material.

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zone. However, brief return visits, of a few days only, were made in the fall of 1948 and in the summer and fall of 1949.

During both seasons, we lived in a two-room bamboo house, which ordinarily is part of the ménage of Lorenzo Xochigua, but which, for the time being, was unoccupied by his family. The house was centrally situated, just off the main plaza, and on one of the chief trails to Papantla (map 7, house *a*, lot No. 29). Once settled, we slowly became acquainted with our neighbors, and, little by little, our circle of friends was expanded until, by the end of the second season, we probably had visited and were acquainted personally with at least half of the local population. Only 35 households cluster about the plaza, and most of the families live in scattered house groups, some as much as 3 hours on foot from our base.

In 1947, three students participated. Gabriel Ospina came as volunteer assistant and remained a month, until he returned to Bogotá, Colombia. His assistance during the first few weeks of adjustment was extremely helpful, and the original forms of our census were largely the result of his labors. José Luis Lorenzo likewise remained approximately a month, when he returned to Mexico City because of ill health. María Cristina Alvarez worked the entire season, returning in 1948, to be with us during the month of February. Roberto Williams García and Angel Palerm remained the full 4 months of 1948, and Florencia Muller joined us for about 10 days that spring. The report is based on the pooled information of all participants. Each student has made concrete contributions to our general fund of knowledge, of which the most outstanding are those of Miss Alvarez and Mr. Palerm.

As my guest during Holy Week of both 1947 and 1948, Bertha Harris likewise collaborated actively in the field, and later, bore with me during the writing of the greater part of the report. Her untimely death is mourned not only by us but by all academic circles in Mexico. The present study is dedicated to her, as a friend, as a distinguished librarian with a wide range of interests, and as an outstanding figure in the field of cultural relations between the United States and Mexico.

Following the 1947 season, Miss Alvarez assisted in clerical work in the Federal census office during many weeks, gathering the data on which map 2 is based. At the conclusion of the 1948 season, Mr. Palerm, the junior author, collaborated in the preparation of the report. The discussion of sixteenth-century distribution and population (pp. 3–12) is largely his. Moreover, he is responsible for the long chapters on history, from the Discovery through the Colonial period (pp. 24–46), and I have done little more than edit and translate this section. Mr. Palerm also has prepared the first drafts of table 1 and of maps 1 to 4, 7, and 10 to 18. Map 7 was one of his field undertakings; map 9, we prepared jointly.

We also have worked jointly on the problem of the Mexican conquests. Both of us read the source material, following which I wrote the running accounts which appear in the main text and in Appendix B, while Mr. Palerm embarked on the long and onerous chore of attempting to identify the conquests, pueblo by pueblo. When this task was completed, the textual accounts were checked against the lists and the maps, and the necessary changes made. The original versions of the chronological tables which appear in Appendix B were prepared by me, limiting entries to those pueblos which appear definitely in the sources as dated conquests. Later, Mr. Palerm revised them, checking my data and adding cases which appeared dubious in a given source, but whose conquest was confirmed by other evidence. In large part, therefore, these tables are his work; the maps of Appendix B are exclusively his, as are many of the notes which accompany them. Last, but not least, Mr. Palerm has taken the responsibility of checking bibliographical citations.

From time to time, Rafael Segovia and Hernán Porras, both students at the Escuela, have volunteered assistance in the clerical work involved in the analysis of our census data.

In addition to the above participants, we are under obligation to several institutions and to many friends and colleagues. Particular thanks go to both supporting institutions: the Institute of Social Anthropology, of the Smithsonian Institution; and the Escuela Nacional de Antropología e Historia, of the Instituto Nacional de Antropología e Historia. Of the first, Dr. George Foster and Miss Lois Northcott have been our towers of strength; of the second, Dr. Pablo Martínez del Río, Arq. Ignacio Marquina, Dr. Daniel F. Rubín de la Borbolla, and Ing. José García Payón. During the 1947 season, the State of Veracruz contributed $500.00 pesos, to defray costs of photography and of horse transportation; it likewise paid the living expenses in the field of Miss Alvarez, who, at that time, held a State scholarship.

Through the kindness of Petróleos Mexicanos, and especially of Ing. Manuel Alvarez, Jr., and of Ing. Salvador Alvarez Cabañas, we were permitted to use large-scale land maps of the Tajín zone. Don Rafael de la Fuente, of Papantla, also loaned a useful local map, and the Oficina de Hacienda, in Papantla, generously permitted inspection of its land records. In Mexico City, the Dirección General de Estadística suffered us underfoot literally for months; to its staff, particularly Don Enrique Miranda, we are much indebted. Prof. José Luis Melgarejo, of Jalapa, generously provided letters of introduction to several of his friends in Papantla. My aide of many years, Don José María Corona, served as camp manager and cook during both seasons; without his ministrations, we should have been far less comfortable in the field. In his spare time, he worked informally as investigator and accumulated useful information which was added to our general fund of knowledge.

On the score of professional assistance, our obligations are many. Dr. Edgar Anderson has examined maize specimens; Dr. Hugh Cutler, beans and cucurbits; Dr. J. B. Hutchinson, cotton; Dr. Charles Heiser, Jr., chili. A number of the 1948 herbarium specimens were identified by Prof. Maximino Martínez, but for most of the determination of both seasons, we are indebted to Dr. Harold Emery Moore, Jr. Mr. William E. Stone generously took charge of the fumigation and drying of both crop and herbarium specimens. To the staff of the local Rockefeller Foundation office, and particularly to Dr. Dorothy Parker, we are indebted for assistance and advice on several matters connected with agriculture and diet. During a recent visit to Mexico, Dr. Carl Sauer not only took time to study our catalog of Tajín plants, but also read parts of the agricultural section of the manuscript. The chapter on diet has been read by Dr. Robert S. Harris; that on legendary history, by Mr. Robert Barlow and Prof. Wigberto Jiménez Moreno.

Water-supply problems were discussed with Mr. Richard Greeley. Dr. Starker Leopold has suggested identification of a series of local birds, on the basis of descriptions provided by informants; and Mr. Milton J. Lindner has provided identification of a number of fish and crustaceans.

For photographs, we are indebted to Don Gabriel Ospina for plates 3, *a–d*, 4 *b*, *c*, *e*, 9, *c*, *d*, 16, *b*, *e*, 18, *b*, *d*, and 25, *e*, *g;* to Miss Bertha Harris, for plates 8, *b*, *c*, *f*, 11, *g*, 16, *a*, *f*, 18, *a*, 19, *b*, and 20, *d;* and to Mr. George Smisor, for plate 1, *a*. The photographs of plate 29 were taken by the staff of the local Microfilm Laboratory of the Library of Congress. Sketches of embroidery motifs shown in figures 63 to 67 have been loaned by Don Mateo Saldaña, who also drew most of the maps and text figures; some, however, are by Don Félix Díaz and Don Román Piña Chan.

Last, but not least, thanks go to our many friends in Tajín. Our greatest debt is to Don Modesto González, caretaker of the archeological site for close to 30 years, and our chief informant during both seasons. In addition, particular thanks are due Ana Méndez, María Loreto, Mercedes Morales, Elena A. de Xochigua, Santiago Simbrón, Juan Castro, Nemesio Martínez, Agapito Pérez, Cecilio Ramírez, Pablo González, Rutilio Olmos, Magdaleno and Zenón Méndez, Tirso González, Lorenzo Xochigua, Donato Santes, Francisco Villanueva, Antonio Bautista, and Manuel de la Luz.

These friends, and many others, have given us a feeling of genuine affection for Tajín. Such affection does not result automatically, but is the outgrowth of the friendliness, hospitality, and cooperation which we received on all sides. These endearing traits ameliorate the grimmer aspects of life in Tajín, where there are bickerings and feuds, both within families and between families, and where homicide is almost as frequent as is death from natural causes. In any case, for better or worse, these friends have made possible the description of life in Tajín, presented herein and in companion publications.

As is inevitable in Mexico, Totonac culture is a fusion of the old and the new, but as such, it is a living culture. Consequently, data come as much from observation and casual conversation as from direct questioning of informants; and in Tajín, it is not necessary to seek the aged, the lame, the halt, and the blind, for interrogation concerning their mode of life in the past. During both seasons, we had one regular, paid informant, Modesto

González, who was shared by the different members of the field party. Upon occasion, other individuals were asked to give us a full day of their time, for which we paid at the current local rate of $5.00 pesos.

All information was recorded in Spanish and was typed, in duplicate, on 5- by 8-inch sheets, which then were filed according to the invaluable key published by Murdock. In addition, we attempted what proved to be an over-ambitious census, which Miss Alvarez was able to fill for close to 40 families. However, it was not feasible to apply this census to the entire community—because the original questionnaire required a session of at least 2 hours; because many people were alarmed by inquiries concerning property and crops, fearing that an increase in taxes might result; and because of the diffuse settlement pattern, which made it impossible, for want of time, to visit all houses of the community. For language, age, costume, and provenience of parents and grandparents, all families of Tajín are represented in our census, but more detailed information is confined to about 40 households. In 1948, as a byproduct of our field investigations, Mr. Palerm took about 60 psychological tests, some Rorschach, some Thematic apperception.

In collecting data and in preparing the report, our interests have been relatively broad. We feel that our first obligation is descriptive, and we have attempted to formulate as clear and detailed a picture as possible of the modern community. Few ethnographic studies of Mexican groups are adequate from the simple descriptive aspect, and on all sides, one is frustrated for want of comparative material.

Secondly, we are particularly interested in the problems which beset the modern Totonac, and sprinkled throughout the report are suggestions concerning possible improvement in agriculture, diet, marketing, housing, and other themes. These have been made to the best of our ability, on the basis of first-hand knowledge of the local community. In all cases, final judgment of a specialist is required, but we have attempted to marshal the data so that he will be sufficiently oriented to form an opinion.

With the recent establishment of the Instituto Nacional Indigenista, under the directorship of Lic. Alfonso Caso, Mexico now has the mechanism for effecting reforms among indigenous communities. We hope that the current report may provide the Institute with fodder, so that the Government may take steps designed to improve the local standard of living and to incorporate the Totonac into national life.

As a rule, the Totonac hardly think of themselves as Mexicans—except in rare cases, when one drink too many has been passed, and an individual may express strong nationalistic sentiment. To most Totonac, the Mexicans are the city dwellers—the mestizos of Papantla, with whom the Tajín folk have their closest outside ties.

Yet, if given an opportunity, the Totonac might contribute a good deal to national life. Commercially, they already are making a major contribution, for virtually the entire vanilla production in the Papantla zone lies in their hands.

Apart from commercial aspects, the Totonac have many admirable human qualities. They are eager for learning. Almost every man hopes that his son—not his daughter—may have an education. At least two men, one at considerable sacrifice, send their sons to school in Papantla, for local training does not extend beyond the third grade. Over a period of years, the Totonac applied for Federal and State funds to assist in the construction of a school. When, after a long series of temporizing letters, no aid was forthcoming, the community built its own school. Stone was gathered through communal labor; land was rented, and again through public labor, maize was grown. From the proceeds of successive harvests, masons were brought from Papantla to erect the building. Work went slowly, but in the course of a few years, Tajín had a substantial stone school building, with tiled floor, a sidewalk, and cedar shutters. At long last, a small Government subsidy was forthcoming, and apparently is to be used for the purchase of school furniture.

Many Totonac are genuinely talented. Although none has formal training, several of our acquaintances draw with skill. Virtually all the men are musical, and Tajín boasts a surprising number of semiprofessional musicians who, with a minimum of training, play assorted instruments.

Not only are the Totonac gracious and thoughtful hosts, but they adopt orphans and take elderly indigents into their homes with a generosity quite unknown among us. Families in far from prosperous condition often bestow gifts—of maize, soap, or some other useful article—on distant relatives in poorer circumstances. The Totonac are real people; they are clean, self-respecting, eager for knowledge, friendly and warm. Although they are in immeasurably better economic condition than are most native groups in Mexico, obviously, their situation could be much improved, through judicious reforms and planned assistance.

Our interests are not limited to modern problems and their possible solutions. At the same time, we are genuinely interested in cultural survivals, and in an understanding of general historical background, without which no culture can be seen in perspective. A summary of available historical data has been prepared, so that the reader may view the modern culture in its proper setting.

With respect to the reconstruction of culture history, little can be attempted without fuller comparative material from other parts of Mexico. Ethnological investigation has lagged and relatively little is known of native peoples; the information at hand is both spotty and sparse. Many culture traits found among the Totonac may have a significant distribution. But for want of comparative data, we cannot guess whether they are old, widespread, possibly generic Mesoamerican elements, or whether their presence in Tajín is the result of influences from the highlands in relatively recent pre-Conquest times. There are suggestions of circum-Caribbean resemblances and even vaguer clues to what might be an essentially Gulf coast complex. But distributions are so imperfectly known that we can do little but mention the possible existence of such ties. Nevertheless, at the end of the second part of this report, we shall attempt to place the culture of Tajín, insofar as the data permit.

Concerning the immediate neighbors of the lowland Totonac almost nothing has been published. A large block of Mexicano and highland Totonac peoples lies to the west and southwest (map 2), but we know virtually nothing of their culture. The Tepehua and Otomí, farther west, and the Mexicanos to the northwest, are little more than names. Although the Huasteca—the great ethnic zone north of the lowland Totonac—has been studied exhaustively by G. Stresser-Péan, his report is unpublished. In the course of a brief conversation, he has been kind enough to provide a few comparative data, but until his monograph appears, the Huasteca will continue to be virtually unknown ethnographically.

We made a hasty week-end jaunt to the most accessible portion of the Huasteca,[2] merely to obtain some general impressions. The natural background—terrain, climate, and vegetation—are very similar to Tajín. House types and furnishings also seem pretty much the same, and agricultural problems must be roughly parallel. There are, however, some suggestive differences in economy. Although the Totonac raise yellow corn only incidentally and spurn it as human food, it appears to be the preferred maize in the entire Tamazunchale-Tancanhuitz zone (ftn. 69, p. 147). Moreover, in the part of the Huasteca we visited, vanilla is negligible or lacking. Perhaps in this area, cash income is derived instead from cattle. When Stresser-Péan's report is published, we should be in a position to appreciate more fully the differences and the resemblances between Totonac and Huastec.

The present volume (Part 1 of the report) opens with a series of chapters designed to give background for the Totonac as a whole, followed by a detailed discussion of economy, housing, and technology of the Tajín Totonac. Appendix A presents basic information concerning population and speech; B treats of the ancient Mexican conquests, with particular reference to Totonacapan; C is dedicated to vegetation; and D gives an informant's description of local birds. Appendix C contains our herbarium catalog. Many of the plants there listed are used medicinally; as a consequence, in part, this appendix anticipates the discussion of Tajín therapy, which will appear in Part 2.

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[2] That is, the Tamazunchale-Tancanhuitz stretch of San Luis Potosí, along the international highway. By local residents, Tancanhuitz is considered Huastecan par excellence. The town itself appears to be essentially mestizo with, moreover, a generous sprinkling of *gachupín* merchants. However, on Sunday, people from small neighboring communities pour into town, and a fair proportion of the business transactions is in the Huastecan language.

Tamazunchale, at the southern end of the stretch, is not of Huastecan speech today. Both here and in nearby Matlapa, we are assured that the rural hinterland is predominantly Mexicano, with a scattering of Otomí. Presumably, this indicates a shift in speech since the middle of the sixteenth century, for then Tamazunchale lay in the province of Pánuco (Suma, No. 616). Dra. Eulalia Guzmán suggests that this replacement has resulted from colonization by Tlaxcalans along the route followed by Cortés in the course of his conquest of the Pánuco. Our feeling is that a good many Huastecan cultural elments have survived the shift in speech: for example, house type and a preference for yellow corn. However, until we know more of Huastecan culture, we are scarcely in a position to recognize possible survivals.

Originally, we planned to include all of material culture in the first part. However, because of bulk, it appeared advisable to reserve the treatment of clothing and several other aspects of material culture for the companion volume (Part 2). The latter also will cover nonmaterial culture, although it is hoped that folk tales and our detailed account of the Negrito dance may be put on record through student publications; the first, by Roberto Williams García, the second, by Angel Palerm. The psychological tests mentioned previously are being prepared for publication by Carmen Viqueira, an advanced student in psychology at the Universidad Nacional de México.

In the spelling of modern pueblo names, we have followed the 1930 Federal census. Sometimes, for special reasons, the orthography of the sources has been retained; in such cases, the name appears in quotation marks. Names of extinct pueblos are so treated, likewise pueblo names no longer current, even though the town still may exist, under a different designation. For example, "Jicotepec" is the former name of modern Villa Juárez. The two exceptions are the famous old centers of Tlatelolco and Tenochtitlan; both appear without quotation marks and Tenochtitlan, without accent.

Spanish words and hispanicized terms of Mexicano or Nahuatl origin appear in italics, with exception of such well-known words as pueblo, arroyo, milpa, tortilla, atole, patio, machete, and so on. Totonac words are not italicized.[3]

ISABEL KELLY.

TEPEPAN, D. F.
February 1950.

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[3] We profess neither skill nor training in recording native terms. In general, vowels have Spanish values; this applies to *i, e, a, o,* and *u*. An open *e* occurs but was not distinguished consistently, hence has not been differentiated in the text. The symbols ɔ and ʌ represent vowel values found respectively in our "saw" and "but." Others include: *¢*, pronounced *ts; č, ch; š, sh; j,* as in Spanish *jorobado; l,* sonant *l; ł,* surd *l;* λ, *tl; k, m, n, p, s,* and *t,* as in English; *q, back* palatal *k; ñ,* as in Spanish *cañón; w,* as in English "weather"; *y,* as in English "year."

A period above the line indicates lengthening; a reverse apostrophe (ʻ), aspiration

The glottal stop is represented by a hook (ʔ), which consists of a question mark without the basal point. Since there is a slight difference in the form of the interrogation point in the 6- and 10-point type used in the present paper, the corresponding symbols for the glottal stop are not quite identical. They are, nevertheless, readily recognizable. The glottal stop is prominent in Totonac and often is carried over into Spanish, especially by children. Thus, if one asks a youngster a question, the reply may be "Noʔ," or "Siʔ."

THE TAJIN TOTONAC

Part 1. History, Subsistence, Shelter, and Technology

By Isabel Kelly and Angel Palerm

TOTONAC AND TOTONACAPAN

Early recognized as one of the major ethnic groups of Mexico, the Totonac are mentioned, although not in detail, by virtually all the early chroniclers.

The etymology of the name is unknown. That suggested by Patiño,[4] "three hearts" or "three beehives," seems somewhat artificial, although it is not impossible that his less literal translation of "three centers" may coincide with the modern dialectic areas (Aschmann, p. 34). Our informants agree readily to his translation of the component parts of the term but are unable to offer a translation of "Totonac" as such.

Slightly less studied is a late sixteenth-century explanation offered by residents of the Totonac pueblo of Jonotla,[5] who claim that the name applied to the "people and all this province and cordillera" is derived from that of an idol called Totonac. However, the 1581 informants from the Tetela region of the Sierra de Puebla state that the name means "people who come from where the sun rises" (Paso y Troncoso 5: 152, 168).

Sahagún offers still another explanation. According to him, Totonac, together with certain other ethnic designations, are derogatory terms indicating, presumably in Nahuatl, little capacity or ability; however, his chief charge seems to be that the people of the lowlands are "too dressed up, and with flowers (roses) in their hands, and were very timid and rustic, or dull." [6]

Regardless of etymology, the term "Totonac" is well established in the literature. It is not clear how soon after the Discovery the Spaniards associated it with the people who later bore that name. The first Totonac known definitely to have had contact with the Spaniards was a delegation of five, sent from "Cempoala" to inspect Cortés' entourage. Díaz del Castillo (1: 160) calls their language "totonaque," but since he wrote some 40 years after the incident, he may have projected a subsequent association into the past. Cortés himself does not mention the Totonac by name, nor does Oviedo, who, by his own statement, relied heavily upon the letters of Cortés. Gómara

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[4] "Totonaco. Palabra compuesta de *toto,* tres y de *naco,* corazón ó panal que forman unas avispas negras, significando por lo mismo, 'tres corazones ó tres panales' (totonaco del rumbo de Chiconquiaco y del antiguo Zempoala) ; aquí en Papantla, tres en totonaco se dice *'Tutu'* y corazón *'Nacú.* En senido figurado podría traducirse por 'tres centros,' (porque así como el corazón es el centro de la circulación de la sangre, puede considerarse el panal como un centro donde reside ó afluye un pueblo de avejas; en cuya acepción, en mi concepto, la aplicaron los primitivos totonacos para significar, quizá, que su territorio se componía de tres Estados ó Cacicazgos en cuyas capitales ó centros residían los Caciques Soberanos" (Patiño, p. 5).

[5] " . . . y que tenian vn ydolo a quien sacrificaban llamado TOTONAC, y que no savian ques la causa de llamarle deste nonbre, y que por este ydolo les llamauan los comarcanos a ellos Totonacas, y que asi oy en dia se an quedado con este nonbre este pueblo y toda esta prouinçia y cordillera . . ." (Paso y Troncoso 5: 128).

[6] "Estos vocablos ya dichos, *tlalhuícatl, totonac, toueyo,* denotan en sí poca capacidad o habilidad, y así al que es inhábil o tosco le llaman de *tlalhuícatl,* o *totonac,* o *cuextécatl,* o *toueyo* . . . Sus defectos que tiene son que andan demasiadamente ataviados, y con rosas en las manos, y eran muy tímidos y toscos o torpes" (Sahagún 3: 132).

Moreover, a sixteenth-century source from Jalisco gives Totonac as the equivalent of rustic: "La otra lengua es *totonac,* que quiere decir en nuestra lengua 'los rudos' " (Relación de Ameca, p. 252).

Evidently Totonac, like a number of other terms, may be applied to linguistically diverse groups which are considered rude or rustic. Perhaps for this reason, there are occasional references to Totonac in various parts of the country, well removed from the area we associate with them. One report, for example, has Totonac in the jurisdiction of old "Antequera" (Epistolario 2: 90).

(1:111), not an eyewitness, merely identifies the five individuals as of "Cempoala." But shortly thereafter (1:127), when Cortés and his party visit "Quiahuixtlan," he remarks that the language spoken there and in all "that mountainous area" was Totonac. This would indicate that the term was current at least by the middle of the sixteenth century.

Several sixteenth-century descriptions of the Totonac, found in the *relaciones geográficas*, are far from flattering. Those of Papantla are said to be "rustic and rough," but hard-working. The Totonac of Misantla are described as people "of very little understanding, who want only to eat and drink" and who, moreover, "flee from work." Much the same is said of those of "Matlatlan" and Chila.

A far more sympathetic account is given by Las Casas (p. 465), on the evidence of an eyewitness,[7] who lived among the Totonac (or "Totones") in the years immediately following the arrival of the Spaniards:

> He [the informant] declared, however, one thing, that in all that time, he never saw an ugly and unjust thing which they did to one another, nor offense, nor wrangle (*reñilla*), nor affront of words, nor of deed, but that all lived in great peace, calmness, and concordance, humble and amiable with one another, taking care in nothing but to keep their laws and to occupy themselves in the acts and practice of their religion.

The area inhabited by the Totonac was called by the Mexicans Totonacatlalli (Sahagún 3:296). Generally, however, the old sources use the term, Totonacapan, of which there are variant spellings: Totonapan (Ixtlilxochitl 2:196) and Tonacapa (Epistolario 9:28). Later, we shall try to indicate the extent of Totonacapan in the sixteenth century and, subsequently, to define the area in modern times.

Until a physical anthropologist undertakes a serious study of the Totonac, little can be said concerning the physical characters of the people. Our observations below are casual and inexpert; and our acquaintance is limited to the Totonac of Tajín.

Here, the population consistently is short and slight. The two tallest men in the community—noticeable in a group because of their stature—are about 172 cm. in height. Others average several centimeters less, with the women still shorter. Most of our acquaintances are slim; one man and several women would be considered stout. There seems to be a markedly higher frequency of corpulence among women than among men. On the whole, the group is short and appears frail in build.

This frailness is deceptive, for the Totonac have extraordinary physical stamina. All are excellent and rapid walkers, but the outstanding endurance is found among the native dancers. For example:

> A group of Negrito dancers once invited us to accompany them to a neighboring village, where they were to perform. We left at dusk and spent a brisk two hours walking over hill and dale; the dancers scampered ahead and, puffing and wheezing, we barely were able to keep up with them.
>
> Once arrived, our companions changed to their dance raiment and danced all night, without a break. The Negrito dance is a particularly vigorous one, for it is essentially a rapid tap dance, with few rest periods. At dawn, the Negritos capered back to Tajín, leaving us far in the rear.
>
> The amount of energy required by such a performance is very considerable, especially during the excessive heat of the spring and summer months. Every Negrito dancer carries a handkerchief in one hand, with which to mop perspiration. And between numbers, he wrings the handkerchief, leaving the sounding board on which he stands spotted with perspiration.
>
> These all-night performances are routine work for the Negrito. Ordinarily, at least during several months of the year, there is practice once a week, interspersed with public appearances.

Moreover, when necessity arises, the Totonac are able to do with little or no sleep. An extreme case is presented by our friend, Agapito Pérez:

> Agapito is, like most of the Totonac, a farmer, but he also is a musician. He is violinist with one of the local orchestras and, moreover, with one of the groups of Negrito dancers.
>
> The latter gave a performance for us one Friday. Actual dancing started in the morning, between 10:30 and 11:00, and lasted until 5 in the afternoon. Except for an hour or so for dinner, Agapito played constantly. That evening, the same Negritos made a public, all-night appearance in honor of a visiting image of St. Joseph. The following morning, the orchestra, including Agapito, played in honor of the saint. That night, the same orchestra played for a dance given for the benefit of the

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[7] ". . . lo hobe de persona que siendo muchacho lo vido por sus ojos estando solo entre aquellas gentes sin otro español alguno, al principio que en la Nueva España entraron cristianos . . ." (Las Casas, p. 460). We suspect that Las Casas' informant may have been the young page left by Cortés in "Cempoala," to learn the language. In any case, the informant is said to have remained 4 years (Las Casas, p. 465).

local school. And following the dance, the Negritos again performed, in honor of St. Joseph.

For Agapito, this meant constant violin playing most of Friday and all of Friday night and Saturday morning. Saturday afternoon, he slept a few hours, then walked to Papantla to buy new strings for his violin. He returned, to play all of Saturday night.

As a matter of fact, two nights a week, Agapito ordinarily does not go to bed, for he has one all-night practice with the orchestra and another with the Negritos. If either of these groups is committed to a public performance, he may be up a third night during the week. He regards this program casually and when he returns at dawn, goes directly to his fields to work.

This is not standard routine for all Tajín residents, but by and large the group exhibits marked physical stamina—the more remarkable since to us the diet appears to be quite deficient (see pp. 166–171).

Brachycephaly is marked, especially among children, who sometimes appear almost grotesquely broad-headed. Men, in particular, have fine features; for some obscure reason, the women ordinarily have heavier faces. There is a wide range in skin color; several people with noticeably yellowish tones may owe this color in part to malaria.

Ordinarily, the hair is dark and abundant. Generally it is straight, although a few individuals have slightly wavy hair. Baldness is unknown. In particular, women have beautiful hair, although often it is red-streaked, owing to the custom of adding lye to bath water. As is to be expected, body hair is scant. One individual is pointed out as meriting special attention in that he has hair on his chest and a relatively heavy beard; it is said, with considerable pride, that he is like "the tall people of Papantla."

Naturally, eyes are brown, but there is a small occurrence of light hazel eyes. We have made no consistent observations concerning the Mongoloid fold, although it occurs. The Mongoloid spot frequently is noted among small children, especially in certain families. Little Carmen, the 9-month-old daughter of Filiberta González, has a large, irregular blot at the base of the spine, with three smaller spots, more or less circular, above. An elder son, about 3 years old, now has lost his spot. Another son, aged 9 or 10, formerly had an exaggerated case, with markings even on the shoulders. The mother looked diligently, but now could find no trace. All of her eight children, she says, have borne this spot. However, the infant daughter of Doña Filiberta's brother gives no evidence of such marking.

Although it appears to us that the Tajín Totonac exhibit considerable racial intermixture, there are extremely few individuals who show noticeable Negroid characters. This is particularly noteworthy, since Veracruz is a zone where there was an early and fairly heavy introduction of Negroes. Papantla, however, appears to be outside the area of strong Negro influence (p. 37).

SIXTEENTH-CENTURY DISTRIBUTION

The extent of sixteenth-century Totonacapan is shown in map 1.[8] Information is based on sources between 1519 and 1623 [9]—that is, from the Spanish Conquest to and including the visit made by Mota y Escobar.

The area lies along the Gulf coast, roughly from the Río Cazones, in the north, to the Río de la Antigua, in the south. Inland, it includes a large section of the eastern slopes of the Sierra Madre, as well as parts of the highlands of Puebla. The westernmost limits are represented by Pahuatlán (map 1, No. 58); by several settlements in the vicinity of Acaxochitlán (No. 72), on the present Hidalgo-Puebla frontier; and by Zacatlán (No. 69), in modern Puebla. From Zacatlán, the boundary runs almost due east to Jalacingo (No. 17) and Atzalan (No. 4), thence southeast to the Gulf, at the mouth of the Antigua.[10]

This southeast extension is well defined by the early records. In the zone of Jalacingo (No. 17) and Jalapa (No. 18), Mexicano is dominant, and southwest of these points, it occurs to the exclusion of Totonac. In none of the sources we have

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[8] The map is essentially a graphic presentation of the language data which appear in table 14, of Appendix A, where also will be found a discussion of source material. Owing to bulk, it seems advisable to present the basic data in an appendix instead of incorporating them in the main text.

[9] This year, a full century following the Conquest, has been chosen arbitrarily so as to permit inclusion of the first-hand observations on native language made by Mota y Escobar, Bishop of Tlaxcala. There is not the slightest indication that Totonac speech was expanding at this time; in fact, all evidence is to the contrary. Accordingly, it seems likely that a pueblo which spoke Totonac in the days of Mota y Escobar likewise was Totonac during the immediately preceding years.

[10] On the whole, these limits coincide fairly well with early statements. For example, Torquemada (1 : 398) quotes the chief of "Cempoala" to the effect that Totonacapan "almost reached to Pánuco." And Antonio de León (table xli) writes: "En Totonaca, Provincia, que por la costa de Nueva España se estiende, desde la Veracruz, casi hasta Panuco, i confines de Tututepec; i llega a la Cordillera, donde nace el rio de Almeria, que desagua en el Seno Mexicano."

Legend to map 1.

The extent of sixteenth-century Totonacapan, 1519 to 1623. Authority for each pueblo will be found under the corresponding number in table 14 of Appendix A.

The map shows all pueblos for which Totonac speech is reported, between the years indicated. However, to this time span there are two exceptions, Nos. 44 and 65. Here reference is to legendary prewhite days, hence an interrogation point accompanies these entries on the map.

A free-standing number represents a pueblo for which the sources mention only Totonac speech. However, the latter, quite frequently occurs with Mexicano and with Otomí. When the pueble is Totonac-Mexicano bilingual, the number is within a square. A circle indicates that both Totonac and Mexicano are reported, but without clear evidence of bilingual character; the two languages may exist side by side, without indication of intermixture, or the source may not be explicit.

Along the northwest frontier, Otomí occurs, in conjunction with Totonac and Mexicano. A triangle indicates the presence of Otomí; we have found no mention of pueblos of Totonac-Otomí bilinguals.

When the source material is confused or contradictory, a discussion will be found in the notes which accompany table 14.

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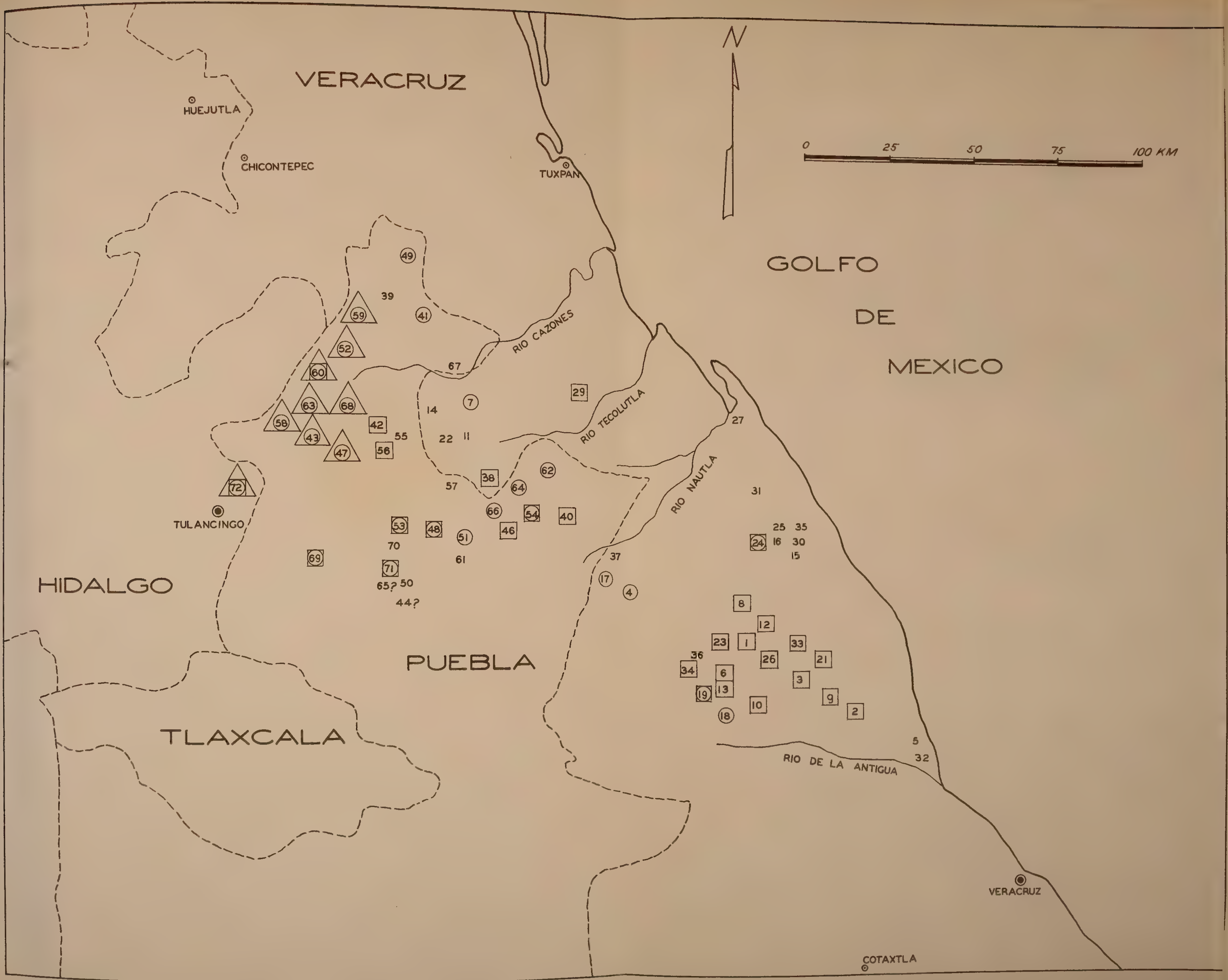

Map 1.—The extent of sixteenth-century Totonacapan.

(For legend see pp. 4.)

examined is there the slightest indication that Totonacapan should be extended south to Cotaxtla, as Melgarejo (1943, p. 11) apparently contends. However, between Jalacingo (No. 17) and Zacatlán (No. 69), tradition recorded in the late sixteenth century (Paso y Troncoso 5:152, 168) would have Totonac once current in Cuautenco (No. 44) and Totutla (No. 65).

Along the western boundary, Mexicano and Otomí are reported, together with Totonac; farther west, the sources give only Mexicano and Otomí. However, it is possible that Totonac speech once extended slightly more to the west than our map indicates. For example, Torquemada (1:287) remarks that the Totonac abut on Tulancingo, just west of Acaxochitlán (No. 72), from which latter area there are definite reports of Totonac speech. Moreover, we know that there were active political, commercial, and even military ties between the Totonac and Tlaxcala, and that one of the principal objectives of the Triple Alliance was to open a separating wedge between the two peoples and to disrupt Tlaxcalan commerce (p. 21).

One problem concerning the western boundary revolves about the apparent non-Totonac enclave between Pahuatlán (No. 58), Huauchinango (No. 47), and Acaxochitlán (No. 72), on the one hand, and Zacatlán (No. 69), on the other. For this particular area, we have found no sixteenth-century records of linguistic affiliation. However, later reports indicate Totonac speech in precisely this zone—in Ahuacatlán, Amixtlán, Camocuautla, Coatepec, Huehuetla, Nanacatlán, Tonalixco, Tuxtla (AGN, No. 2), and Jalostoc (AGN, No. 4). Moreover, since the majority of these pueblos has retained the Totonac language until the present it appears justifiable to assume that Acaxochitlán and Zacatlán actually are not salient points westward, separated by non-Totonac territory.

The northern border presents greater difficulties. Here, Totonac speech presumably is bounded by the closely related Tepehua and by Huasteca. The northernmost pueblo for which Totonac is reported in the sixteenth century is Huitzila (map 1, No. 49), where, as a matter of fact, Mexicano is said to be dominant.

The Tepehua language receives little mention in the old records, although it is noted for Chicontepec, together with Otomí and Mexicano (Doctrinas, p. 219); for Huejutla, along with Mexicano (Paso y Troncoso 6:185); and for Huayacocotla (García Pimentel, 1897, pp. 248–254). Presumably, Tepehua also was current in "Conzoquitlan," near modern Tutotepec, in Hidalgo (Ixtlilxochitl 1:60). In present times (map 2), Tepehua is concentrated adjacent to the ancient northern peak of Totonac and, in Pantepec, overlaps with it. The sixteenth-century situation presumably was parallel.

On the coast, we have been unable to find any early records concerning the speech current in the zone immediately north of Papantla, although in the latter vicinity, the presence of Totonac is reinforced by a late reference to that language in Coatzintla (AGN, No. 8). Nevertheless, the native language of Tuxpan, in the days of the elder Moctezuma, evidently was Huasteca (Tezozomoc, pp. 105-110; Durán 1:165-171), hence the northern boundary of Totonacapan clearly lies somewhere between that point and Papantla (No. 29).[11] Here again, we must rely on modern evidence. Since in Tihuatlán and Cazones today, there is a considerable Totonac element (map 2), it seems not unreasonable to place the northern boundary somewhat north of Papantla, roughly at the Río Cazones.

South of Papantla (No. 29), between it and Misantla (No. 24), is a great expanse of territory for which there are no sixteenth-century records concerning speech. To be sure, Nautla (No. 27) lies at an intermediate point, although farther east, on the Gulf shore. Prior to the Spanish Conquest, a Mexican garrison had been established at Nautla, and it is quite possible that the Totonac withdrew from the immediate environs of the enemy post. Moreover, this whole strip of coast, from "Cempoala" (No. 5), north to Nautla (No. 27), and on to Tecolutla and Tuxpan, was appropriated by early Spanish settlers for cattle ranches (ftn. 67, p. 37). This likewise may have caused dislocation of any Totonac population. In any case, it appears that this stretch of country is one which does not lend itself to intensive agriculture, and in all likelihood, it was not heavily peopled at the time of the Conquest. Certain it is, there is no mention of any large Totonac centers in this zone, nor, so far as we know, have archeological remains of importance come to light.

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[11] The Suma (No. 449) states that Papantla and Tuxpan comprise a single zone (*tierra*), and both pueblos were held by the same *encomendero*. The fusion by the Suma presumably does not rest on linguistic or ethnic grounds; more likely, it reflects the political organization found by the early Spaniards, for we know that Tuxpan and Papantla paid their tribute jointly to the Mexicans (Colección de Mendoza 5:87).

The over-all configuration of ancient Totonacapan was curiously like a dumbbell, laid across the map from northwest to southeast (map 1). To the northwest was a heavy concentration of pueblos, with another in the southeast, the two connected by a narrow neck. The southerly cluster received the first impact of Spanish conquest and colonization. Its principal centers either disappeared early or became progressively acculturated, and today there are few remnants of Totonac speech in this area (map 2). On the contrary, the northwesterly cluster of Totonac pueblos managed to remain relatively aloof from Spanish influence. On the fringes of the Sierra Madre, it lay in rugged country, evidently off the beaten path in the sixteenth century as today. At present, as the result of this isolation, it is the zone strongest in Totonac speech and presumably in Totonac culture.

The neck which connected the two main bodies of Totonac language during the sixteenth century was surprisingly spindly and tenuous. Map 1 shows it to have been comprised of three pueblos only: Jalacingo (No. 17), Atzalan (No. 4), and "Yohualtlacualoyan" (No. 37). However, the direct route from the Valley of Mexico to the Mexican garrison in Nautla runs across this belt, and it may be that this stretch of country received strong impact from the campaigns of the Triple Alliance. We find no record of the speech current in the area immediately northeast of the narrow neck; but northwest and west, the pueblos were exclusively Mexicano.[12] It is not impossible that this strange bifurcation of Totonacapan represents one of the separating wedges so favored by the Mexicans and their allies.

We have seen that along the borders of ancient Totonacapan, there is evidence of mixing with other languages—with Mexicano on the south and west; with Mexicano and Otomí on the northwest. Within Totonacapan, it is possible that there may have existed an isolated nucleus of Mexicano in the Nautla area, owing to the establishment of a Mexican garrison at that point. However, we have found no mention of the linguistic affiliations of Nautla during the sixteenth century, and our one source states that it was Totonac in pre-Conquest times.

Nevertheless, throughout Totonacapan, there is constant reference to Mexicano and Totonac side by side (map 1). Ordinarily, the source states that Totonac is the mother tongue (*lengua materna*), Mexicano, the "general" language, spoken and understood by large numbers of the population. For this apparently bilingual character, various explanations, not mutually exclusive, may be offered.

In the first place, the political influence of the Triple Alliance and its military control throughout most of Totonacapan undoubtedly were contributing factors, although we doubt they can be considered basically responsible. Mexican hegemony seems to have been largely nominal and not of long standing. In the second place, it is well known that the Spaniards relied heavily on Mexicano in the course of their administrative and evangelization endeavors. This, too, undoubtedly played a role in emphasizing Mexicano in the years following the Conquest.

Nevertheless, a number of facts suggest that we must look more deeply for the real explanation. The general dearth of Totonac place names today is suggestive (pp. 51–53). In fact, the want of known Totonac equivalents for such important centers as "Cempoala" and "Quiahuixtlan" is extraordinary, the more especially since the Spaniards did not know these towns through Mexican introduction, but through direct, first-hand contact with the Totonac. Moreover, the Spaniards spent considerable time in both pueblos, and their Totonac hosts were important allies. In addition, it is evident that Mexicano was not confined to what might be called the ruling class, but apparently was quite generally known to the Totonac as a whole. At least, in Papantla, Mota y Escobar (pp. 232–233) preached in Mexicano, and was of the impression that his sermon was understood by the majority of the congregation. It appears most unlikely that sufficient time had lapsed between the Spanish Conquest—or, for that matter, between the conquest by the Triple Alliance—and the dates of our *relaciones geográficas* to account for such major inroads of Mexicano speech.

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[12] For example, Ixtacamaxtitlán, Zautla, Tlatlauquitepec, Atempan, Altotonga, Teziutlán, Zacapoaxtla, Nauzontla, and Cuetzalán (Mota y Escobar, pp. 195, 196, 198, 223–225, 286).

Accordingly, it is necessary to seek more ancient influences which might explain the essentially bilingual character of Totonacapan. Clues are by no means wanting. Legendary history indicates that there were early Toltec contacts in northern Totonacapan, long before the founding of Tula (Veytia 1:153–156); and there seem to have been subsequent ones, following the destruction of that great center (Ixtlilxochitl 1:89, 2:37). Corroboration of Toltec influence is provided by the archeological site of Teayo, north of Papantla, which generally is conceded to have marked Toltec resemblances (García Payón, 1947, pp. 302–303). Moreover, after the fall of Tula, there seems to have been considerable tribal dislocation; Totonacapan was touched by at least one wave of presumably Nahuatized invaders, the Olmeca-Zacateca (pp. 16–17), and by the Teochichimecs, who perhaps fall in the same linguistic category (p. 19).

These traditions of early penetration are suggestive, but there are more precise records of close contact in time of famine. In the fifteenth and sixteenth centuries,[13] there were at least two great periods of want in the Valley of Mexico. During the first, in the days of the elder Moctezuma, the Totonac took advantage of the situation to acquire slaves from the Valley in great number (Durán 1:248–249; Torquemada 1:158; Ixtlilxochitl 2:206; Chimalpahin, pp. 116–117). Apart from this slave element,[14] there seem to have been migrations of considerable importance; entire families moved from the Valley of Mexico to Totonacapan, where they established permanent residence and "where they remained until today" (Durán 1:248).[15] The second period of famine took place in 1505, and appears to have been roughly parallel,[16] although there are no records of outright migration.

In our opinion, these successive influences, reinforced by the late Mexican conquest, and further reinforced by the Spanish use of Mexicano as a lingua franca, are sufficient to explain the bilingual character of Totonacapan in the sixteenth century.

SIXTEENTH-CENTURY POPULATION

The following discussion of the population of Totonacapan during the sixteenth century is based on sources which date from approximately 1550 to 1610. Nevertheless, for 16 pueblos, we have included estimates of the number of inhabitants in 1519, so as to have a rough basis for comparison. In both cases, the discussion is confined to pueblos which are said definitely to be Totonac, either wholly or in part, according to various records between the years 1519 and 1623. As in the preceding section, basic source material is given in full in table 14, of Appendix A, and the explanation which accompanies the table includes a discussion both of sources and of our manner of calculating population.

Attention already has been called to the curious distribution of Totonac speech in the sixteenth century, with one zone of concentration in the northwest and another in the southeast. Since these two areas present rather distinct aspects, from the viewpoint of population, they will be treated separately.

SOUTHERN TOTONACAPAN

The cluster of Totonac pueblos to the southeast was the first to feel the impact of Spanish conquest and colonization, and early records are relatively plentiful concerning this area. Population figures for southern Totonacapan may be summarized as follows:

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[13] One source (Códice Chimalpopoca, p. 13) reports prolonged famines at earlier dates, allegedly in the tenth and eleventh centuries, during Toltec dominance. There is no specific mention of Totonacapan, but it is not impossible that the fertility of the coast attracted the Toltec then, as it did the Mexicans in later times.

[14] ". . . les anciens Mexicains se vendirent, et . . . deux parties, dit-on, se donnèrent en servitude. C'est pour cela que les Totonaque principalmente vinrent acheter des Mexicains . . ." (Chimalpahin, pp. 116–117).

[15] The same author (1 : 249) adds: ". . . y así se hallan oy en dia en aquella tierra barrios de mexicanos, chalcas, tezcucanos, xuchimilcas, tepanecas . . ."

[16] ". . . solamente hubo maíz en lo que llaman Totonacapan . . . y allí acudieron a proveerse y remediarse los que pudieron" (Mendieta 2 : 16).

Pueblo	Population		
	Ca. 1519 (from column E, table 14)	1565 (after Cook and Simpson)	Ca. 1550–1610 (average, from column H, table 14)
Acatlán (No. 1) [1]	2, 000	400	388
Almolonga (No. 3)	6, 000	82	82
"Cempoala" (No. 5)	80, 000–120, 000	48	72
	80, 000	----------	----------
	120, 000	----------	----------
	80, 000	----------	----------
Chapultepec (No. 6)	8, 000	525	547
"Ciguacoatlan" (No. 12)	4, 000	200	167
Coacoatzintla (No. 13)	3, 200	577	505
Colipa (No. 15)	24, 000	----------	467
Jalapa (No. 18)	120, 000	2, 556	3, 868
Jilotepec (No. 19)	4, 000	1, 493	1, 289
Miahuatlán (No. 23)	8, 000	600	333
Naolinco (No. 26)	6, 000	[2] 860	902
Tepetlán (No. 33)	4, 000	426	376
Tlacolulan (No. 34)	8, 000	2, 800	1, 975

[1] Numbers refer to table 14, Appendix A.

[2] With Coipa, "Almería," "Malinalcingo," Tlapacoyan, and "Tamomolo," the latter pueblo in the Huasteca.

This tabulation brings three points into strong relief: (1) the presence of large centers of population such as "Cempoala," Colipa, and Jalapa, together with other pueblos of moderate size; (2) the major decline in population following the Conquest; and (3) the relative stability between 1565 and 1610.

The presence of urban centers perhaps is to be explained by intensive agriculture, combined, at least in some pueblos, with irrigation (p. 99). It is evident from early accounts that, far from being merely a ceremonial center, "Cempoala" was an urban settlement with a large productive population. Moreover, references to the number of warriors in "Cempoala" and its immediate vicinity confirm the impression of a dense population.[17] Cortés (Gayangos, p. 53) places the number at 50,000, as does Oviedo (3:261). Other authors, among them Torquemada (1:402), raise the number to 100,000. Even if we take the lower figure, a total population of 250,000 would be indicated for "Cempoala" and neighboring pueblos, following the ratio suggested by Cook and Simpson (pp. 22–30).[18]

The sharp reduction in population and the disappearance of urban centers is explained in various ways by contemporary and slightly later sources. Illness seems to be the dominant motif. In only one case (Almolonga) is depletion attributed to war (Paso y Troncoso 5:118). In others ("Ciguacoatlan," Coacoatzintla, Tepetlán) the reason is said to be, in part, "personal service" which the Indians are obliged to give in Veracruz (Paso y Troncoso 5:110, 116, 117). Díaz del Castillo (3:150) blames a sugarmill with the destruction of "Cempoala"; Cortés places the responsibility on Narváez,[19] which may, of course, be no more than a reflection of the enmity between the two Spanish leaders. However, in 1529, the steward of Cortés reports that "Cempoala" is in such a state that with major difficulties can 20 Indians be collected for "service" (Epistolario 1:141).[20]

There also is evidence that at least two great epidemics swept Totonacapan: the first, about 1545, and the second, in 1576 (Paso y Troncoso 5:100).[21]

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[17] Shortly after the Discovery, Escalante was able to muster 6,000 Totonac warriors rapidly, for an attack on Nautla (Epistolario 1:76) (p. 29).

[18] The above discussion applies only to "Cempoala" and vicinity. But other sources confirm the impression of a dense population in southern Totonacapan. For example: ". . . al tiempo que los españoles entraron en ella auia dentro de seis leguas a la rredonda desta çiudad muchos lugares y poblaciones grandes de yndios los quales an benido en tanta diminuçion que muchos dellos se an despoblado de todo punto sin quedar rrastro dellos ni mas memoria que solos los nombres y otros tienen agora tan poca veçindad de gente que para lo que fueron antes es lastima de ver el estremo en poquedad á que an benido . . ." (Relación de Veracruz).

[19] He writes (Gayangos, p. 125) that with the arrival of Narváez, ". . . ya estaba casi destruida, porque los que con el dicho Narvaez en ella estaban la habian robado, y los vecinos della estaban ausentes y sus casas solas . . ."

[20] In 1585, "Cempoala" still is mentioned (AGN, No. 3), but by about 1598, only three or four persons remained and they were shifted elsewhere. The place is not specified, and we know only that they were moved to a pueblo visted from the Franciscan center in Jalapa (Torquemada 1:397).

[21] Both were general in New Spain. Concerning the earlier epidemic, it is said: ". . . en diez leguas a la redonda de México de cumbres abajo que se ha llevado la enfermedad de siete meses a esta parte más de cuatrocientos mil cuerpos . . ." (Epistolario 4:232).

The great epidemic of 1576 ". . . fue tan grande, que arruinó y destruió casi toda la Tierra, y aun casi quedaron despobladas las Indias, que llamamos Nueva España . . . quiso saber el Virrei Don Martin Enriquez, la Gente que faltaba, en esta Nueva-España, y fuese tomando raçon de esto por los Pueblos y Barrios, y hallóse, que avian sido los muertos mas de dos millones . . . excedió esta mortandad á las pasada del Año de 1545, en doce veces cien mil Personas. Porque en la Pestilencia del Año de 1545, murieron ochocientas mil Personas . . ." (Torquemada 1:642–643).

However, it is evident that there were more than these two great epidemics. Motolinía (pp. 17–28) speaks of the "ten

The reduction of population in southern Totonacapan must be considered from two points of view: the true decline, principally through epidemics; and the apparent decline, through the flight of the Indians from their ancient centers. The latter presumably was a major factor in Atzalan (AGN, No. 12), as it was in "Cempoala," where, between 1519 and 1529 (No. 5, table 14), an original population, estimated at 80,000 to 120,000, apparently dwindled to 80. Despite the gravity of the epidemics, such a drastic reduction, from disease alone, seems unlikely, and flight of population to more inaccessible points may have been more significant than the sources imply (pp. 36–39).

In general terms, the evident stability of population between about 1550 and 1610 may be explained by the absence of factors which provoked decimation. There seems to have been a lull in epidemics; there was an improvement in general conditions, owing to royal patronage; and the people had more or less accepted and had become adapted to the political, social, and economic structure of the colonial era.

NORTHERN TOTONACAPAN

Information concerning the northwest nucleus, and northern Totonacapan in general, is relatively meager, owing to remoteness from main Spanish routes of travel and to less intensive colonization during the first century following the Conquest. In large part, northern Totonacapan runs along the fringes of the Sierra Madre, and there are early references to its rugged character, its difficult communications, and its lack of readily exploitable resources. These features repelled Spanish colonization, and, at the same time, offered an asylum for Totonac fleeing from other areas.

This same topographic character may explain the apparently low density of population in pre-white times. Although in parts of southern Totonacapan, irrigation was practiced (p. 99) and presumably stimulated the growth of large urban centers, the streams of northern Totonacapan are deeply entrenched, with nearly vertical walls, and irrigation is practically out of the question. In any case, in northern Totonacapan as a whole, native settlements at the time of the Conquest seem to have been of modest size and, except for Papantla, there is no suggestion of any really large urban concentration. Unfortunately, with respect to the population in 1519, there are estimates for only three pueblos:

Pueblo	Population		
	Ca. 1519 (from column E, table 14)	1565 (after Cook and Simpson)	Ca. 1550–1610 (average, from column H, table 14)
Chila (No. 42) [1]	8, 000	[2] 6, 400	1, 561
"Matlatlan" (No. 56)	8, 000		1, 400
Papantla (No. 29)	60, 000	[3] 1, 200	1, 361

[1] Numbers refer to table 14, Appendix A.
[2] Chila with "Matlatlan."
[3] With "Tuzapan."

Although not much generalization is possible on the basis of such scanty information, it is obvious that the population of Chila and "Matlatlan," apparently the largest of the highland settlements, was relatively small when compared to pueblo estimates in southern Totonacapan.

However, there is no dearth of sixteenth-century references to reduction of population.[22] The decline is attributed to various causes, but mortality in battle is not included. In some cases, illness [23] is mentioned but less emphasis is placed on it than in southern Totonacapan. Although we do not wish to underestimate the effects of the epidemics which scourged New Spain between 1519 and 1576,

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plagues more cruel than those of Egypt" which afflicted New Spain. According to him, the first started in "Cempoala" through a Negro with smallpox, who accompanied Narváez. This heretofore unknown disease took a heavy toll, and "in some provinces half the people died, and in others, somewhat fewer" (p. 18). Eleven years later, there was an epidemic of measles, although "not as many died as of smallpox" (p. 18).

Considering that southern Totonacapan was the focal point for the arrival of Spanish ships, it seems likely that it suffered first from the ailments of the Old World, against which the Indians had no immunity.

In addition to disease, as a factor in decline of population, Motolinía (pp. 22–26) cites the Conquest, hunger, the *encomenderos*, tribute, service in mines, slavery of natives, and the construction of the City of Mexico.

[22] When Diego Ramírez visited Ixtepec, in 1552, he reduced the tribute to a third, because of the decrease in population (Epistolario 8: 154). For the same reason, in Jonotla, he reduced it nearly to half (Epistolario 8: 154–155); and he met similar conditions in Zacatlán and Pahuatlán (Epistolario 8: 4–5, 14–16).

Moreover, by 1581, "Tuzapan" had been abandoned and Tenampulco had "hardly any Indians" (Relación de Papantla). By the early years of the seventeenth century, Hueytlalpan also had been seriously affected (Mota y Escobar, p. 226).

[23] Of "Tonatico," it is said, ". . . no tiene gente por las muchas calores y pestilencias que alli a avido ques tierra muy enferma sobre manera" (Relación de Papantla). And for "Matlatlan" and Chila, the explanation is similar: ". . . se han ido disminuyendo con las grandes enfermedades . . ." (Relación de "Matlatlan" y Chila).

it would appear that they were less significant among highland than among coastal Totonac pueblos. Moreover, in the Sierra, flight and concealment of the natives appears to have been practiced on a large scale.[24]

In fact it would seem that in northern Totonacapan, especially among the highland pueblos, decimation did not attain the same extremes as in the south; at least in a number of cases,[24] the reduction evidently was more apparent than real. As a matter of fact, since the rugged area along the scarp front of the Sierra served as an asylum for Totonac fleeing from elsewhere, it is by no means impossible that, owing to the influx of refugees, the population in parts of northern Totonacapan actually increased during the sixteenth century.

However, there is evidence of a major retraction from west to east. Originally, northern Totonacapan included pueblos in the open country of the highlands—Zacatlán and Acaxochitlán, for example—but by the end of the sixteenth century, the Totonac had withdrawn from these two settlements, as well as from Pahuatlán, apparently moving eastward to the rugged country along the fringes of the Sierra Madre. In any event, today, the surviving Totonac are concentrated in the broken country along the scarp front of the Sierra.

In summary, the most important aspects of population in northern Totonacapan may be characterized thus: (1) absence, with the sole exception of Papantla, of great urban centers at the time of the Conquest; (2) scant Spanish colonization; (3) an appreciable retraction from west to east, with pueblos on the high plateau abandoned, but (4) combined with less actual reduction in population between 1519 and 1550 than that which took place in southern Totonacapan; (5) an influx of refugees to the more rugged parts of the zone; and (6) as the final outcome, a concentration of surviving Totonac along the rugged slopes of the Sierra Madre scarp front.

TOTONACAPAN AS A WHOLE

Columns G and H of table 14 (Appendix A) give subtotals of the sixteenth-century population, according to the modern states in which the pueblos are located. These may be combined as follows:

State	Population	
	1565 (after Cook and Simpson)	Ca. 1550–1610 (sum of averages, column H, table 14)
Veracruz	31, 341	37, 417
Puebla	[1] 63, 462	59, 884
Hidalgo		3, 699
Total	94, 803	101, 000

[1] Including Acaxochitlán, in modern Hidalgo.

These figures must fall far short of the actual sixteenth-century population, for the following reasons: (1) Parts of the population evidently contrived to hide, despite the fact that they resided near pueblos. (2) A large number of Totonac escaped direct Spanish domination, through flight to inaccessible areas. (3) Some records, based on number of tribute payers, presumably are incomplete, since during the first year of residence, families were exempt from taxes. (4) There are no data whatsoever for large parts of Totonacapan—for example, the area between Misantla and Papantla; the stretch of country just north of Papantla; that east of Atzalan and Jalacingo; the zone between Zacatlán and Huauchinango; the area north of Chila; and the rugged strip along the Sierra Madre, which functioned as a large-scale refuge site. Manifestly, the sum of these combined omissions must be very considerable, but it is not possible even to guess at the extent of the error.

As an aside, the estimated 101,000 for the sixteenth-century population of Totonacapan is pretty close to the modern figure. Our count, based on the 1940 census, shows 90,378 Totonac, including monolinguals and bilinguals, but not including children of less than 5 years of age (p. 14). In some communities the latter account for close to 20 percent of the population; accordingly, if small children are added to our count, the modern population would exceed that calculated for the sixteenth century.

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[24] It is said of Chichilintla that the number of *tributarios* had not been counted (Epistolario 14: 77), and of Chumatlán, that the *tributarios* should be somewhat more than reported "because they always hide" (Mota y Escobar, p. 232).

Concerning Pahuatlán, ". . . había en el dicho pueblo gran cantidad de gente y después acá por los ecesivos tributos había venido en gran diminución" (Epistolario 8: 14–15). For Papantla, "Tuzapan," Tihuatlán, Jalpan, and Tancoco (the latter in the Huasteca), one document says flatly that the number of *tributarios* is not indicated, ". . . porque no se puede saber, y la causa es por que en toda esta tierra tienen los yndios por costumbre de andarse mudando de un pueblo a otro, por gozar de vn año de libertad que tiene un idio recienvenido a un pueblo de no pagar tributo, y otros se huyen por la dotrina . . ." (Doctrinas, p. 220). Perhaps the population decline in Papantla, which is comparable to that of large centers of southern Totonacapan, is to be explained in part by this tribute exemption, in part by the establishment in that zone of a large number of stock ranches (ftn. 67, p. 37).

With respect to the pre-Conquest population, early estimates are chiefly pueblo by pueblo, and the only figure which may be converted into an approximate subtotal is that for "Cempoala" and environs. This we assume to mean southern Totonacapan, exclusive of the narrow neck about Jalacingo (map 1). For "Cempoala" and vicinity, the lowest estimate is 50,000 warriors, which should indicate a total population of 250,000 persons (p. 8). Yet, subsequently, sixteenth-century sources credit the pueblos of southern Totonacapan with a combined population which averages less than 16,000 persons. This is about 6 percent of the supposed prewhite population, and the reduction rate may be placed at 16.1 (table 1).

For northern Totonacapan, there is no such over-all estimate. The 1519 population of Papantla may be placed at 60,000 individuals (No. 29, col. E, table 14, Appendix A). Here the reduction is even more drastic. Sources allow Papantla a post-Conquest, sixteenth-century population which averages 1,361 individuals, or only 2 percent of the alleged prewhite population. We reckon the reduction rate at 44.1 (table 1).

For the balance of northern Totonacapan, we may hazard a guess. (1) The sixteenth-century averages for "Matlatlan" and Chila are between a fifth and a sixth of the population reported for prewhite days (p. 9). Actually the rate of decrease for "Matlatlan" is 5.7; for Chila, 5.1; the average is 5.4. We may assume arbitrarily that this latter rate of reduction is applicable generally to northern Totonacapan, exclusive of Papantla. (3) Accordingly, we may total the averages for the remaining pueblos of northern Totonacapan (footnote 3 of table 1 specifies the pueblos whose population averages have been taken from col. H, table 14, Appendix A); and to this total (4) we may apply the ratio which holds for "Matlatlan"-Chila. This somewhat unorthodox procedure gives a total of 393,228 persons in northern Totonacapan, exclusive of Papantla.

TABLE 1.—*Population density*

Area	Population		Estimated rate of decrease	Territorial extent (km.^{2})		Density		
						1519		Modern
	1519	Ca. 1550–1610 (sum of averages, col. H, table 14, Appendix A)		By triangulation	By modern municipal units	Based on triangulation	Based on modern municipal units	Based on modern municipal units
Southern Totonacapan (exclusive of Jalacingo area) [1]	[[2]250,000]	15,480	16.1	3,987	4,740	63	53	40
Northern Totonacapan (exclusive of Jalacingo area and Papantla) [3]	[[4]393,228]	72,820	[5]5.4	6,961	7,612	56	52	41
Northern Totonacapan (Papantla only) [6]	[[7]60,000]	1,361	44.1	-----	-----	-----	-----	-----
Intermediate (Jalacingo area) [8]	[[4]61,231]	11,339	[5]5.4	-----	-----	-----	-----	-----
Total	764,459	101,000	----	-----	-----	-----	-----	-----

[1] Including the following pueblos, from table 14: 1–3, 5, 6, 8–10, 12, 13, 15, 16, 18, 19, 21, 23–26, 31, 33–36.

[2] Estimated on the basis of 50,000 warriors reported for "Cempoala" and vicinity, in 1519.

[3] Including the following pueblos, from table 14: 7, 11, 14, 22, 38, 39, 41, 42, 47–54, 56, 58–60, 62–64, 67–69, 72.

[4] Calculated on the basis of the ca. 1550–1610 averages, to which we have applied the ratio of reduction which took place in "Matlatlan" and Chila.

[5] Ratio of reduction demonstrable only for "Matlatlan" and Chila.

[6] Pueblo No. 29, table 14,

[7] Calculated on the basis of 15,000 *vecinos*.

[8] Including the following pueblos from table 14: 4, 17, 37.

The Jalacingo area still is outstanding. Here, arbitrarily, we shall apply the same "Matlatlan"-Chila ratio of 5.4. Since the sixteenth-century population in that zone averages 11,339 we derive 61,231 as the hypothetical total at the time of the Spanish Conquest (table 1).

These calculations are summarized in table 1, where an effort also is made to indicate density of population. Naturally, the territorial extent of ancient Totonacapan (map 1) can be reckoned only approximately. It was calculated first by triangulation, on a 1:500,000 published map (México, Atlas geográfico) and then was checked (succeeding column, table 1) by the area given in the 1940 published census for each modern municipal unit which appeared to fall within the limits of sixteenth-century Totonacapan. Manifestly, in both cases the error must be very considerable, for the borders of the ancient province are ill-defined. Accordingly, the figures make no pretense at accuracy, although they permit us to calculate, after a fashion, the approximate density of population in Totonacapan at the time of the Spanish Conquest.

For comparison, the table shows the modern (1940) density within the same municipal units which appear, as far as we can tell, to coincide with ancient Totonacapan. Again, the figures are no more than suggestive. The modern density is somewhat less than that calculated for the early sixteenth-century province, although the differences are not excessive.

All told, the population estimates for 1519 seem not to be unduly exaggerated. Southern Totonacapan, at least, boasted large urban centers[25] at the time of the Conquest; and Papantla, to the north, also was essentially urban. Lowland Totonacapan, as a whole, was an exceptionally favorable zone for human occupation, and later it will be seen that, since early times, its natural riches attracted the attention and aroused the greed of the peoples of the central highlands.

MODERN DISTRIBUTION AND POPULATION

The present-day distribution of Totonac speech[26] is shown in map 2, and the succeeding map compares the extent during the sixteenth century and modern times.

Shrinkage has, of course, taken place, particularly in the south, where nothing remains save two small islands of Totonac in the rough country north of Jalapa.[27] Moreover, the narrow connecting neck, which formerly united northern and southern Totonacapan in the Jalacingo-Atzalan area (map 1), no longer is Totonac. In short, southern Totonacapan has all but disappeared, and the small cists which remain are rapidly absorbing both Spanish speech and Mexican mestizo culture.

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[25] For example, a sixteenth-century author writes as follows: "De aquí ["Sempual"] adelante, hasta Pánuco, podrá haber hasta cincuenta leguas. Había, así en la costa como esviados de ella, muy grandes villas, poblaciones y provincias, todas muy llenas de gente y muy pobladas: muy grandes poblaciones y muy lindas al parecer, llenas de frutales, y ahora, está todo desierto y con muy poquitos indios" (Aguilar, p. 97).

Archeological evidence likewise confirms the impression of a dense population, and although the survey avowedly is incomplete, 606 archeological sites have been reported, scattered between the Río Pánuco, on the north, and the Tancochapa, on the south (García Payón, 1947, pp. 301–302). Although a considerable time span may be represented, nevertheless, the fact remains that archeological sites are plentiful.

[26] Our modern distribution does not accord in detail with that published by González Bonilla, on the basis of the 1930 census. He reports small Totonac elements in Tenango and Acayucan (both in Veracruz) and in Tlaltenango (Puebla). Moreover, he credits Reyes (Veracruz) with an extraordinarily high occurrence of Totonac. All these pueblos lie far afield of our Totonac block and, according to the 1940 census, are innocent of Totonac speech.

[27] Actually, Totonac speech has survived in a number of adjacent municipalities (table 15, Appendix A), but since it amounts to less than 3 percent of the population, it has been disregarded in maps 2 and 3. This holds, incidentally, for Misantla. However, it may be that here census records are inaccurate, since Prof. José Luis Melgarejo, intimately acquainted with Misantla, is under the impression that most of the inhabitants are Spanish-Totonac bilinguals.

Legend to map 2

Modern Totonacapan. As a base, we have enlarged a map of municipal units, issued by the Secretaría de la Economía Nacional, Dirección General de Estadística, Dirección de Geografía, Meteorología e Hidrología, 1941.

The present-day distribution of speech here shown is taken from the 1940 Federal census records—not the published reports, which ignore bilinguals, but the original census sheets, on file in the offices of the Dirección General de Estadística. The published census considers as Spanish-speaking all bilinguals who control both Spanish and a native tongue; we have reversed the procedure and here have counted such bilinguals as of native speech.

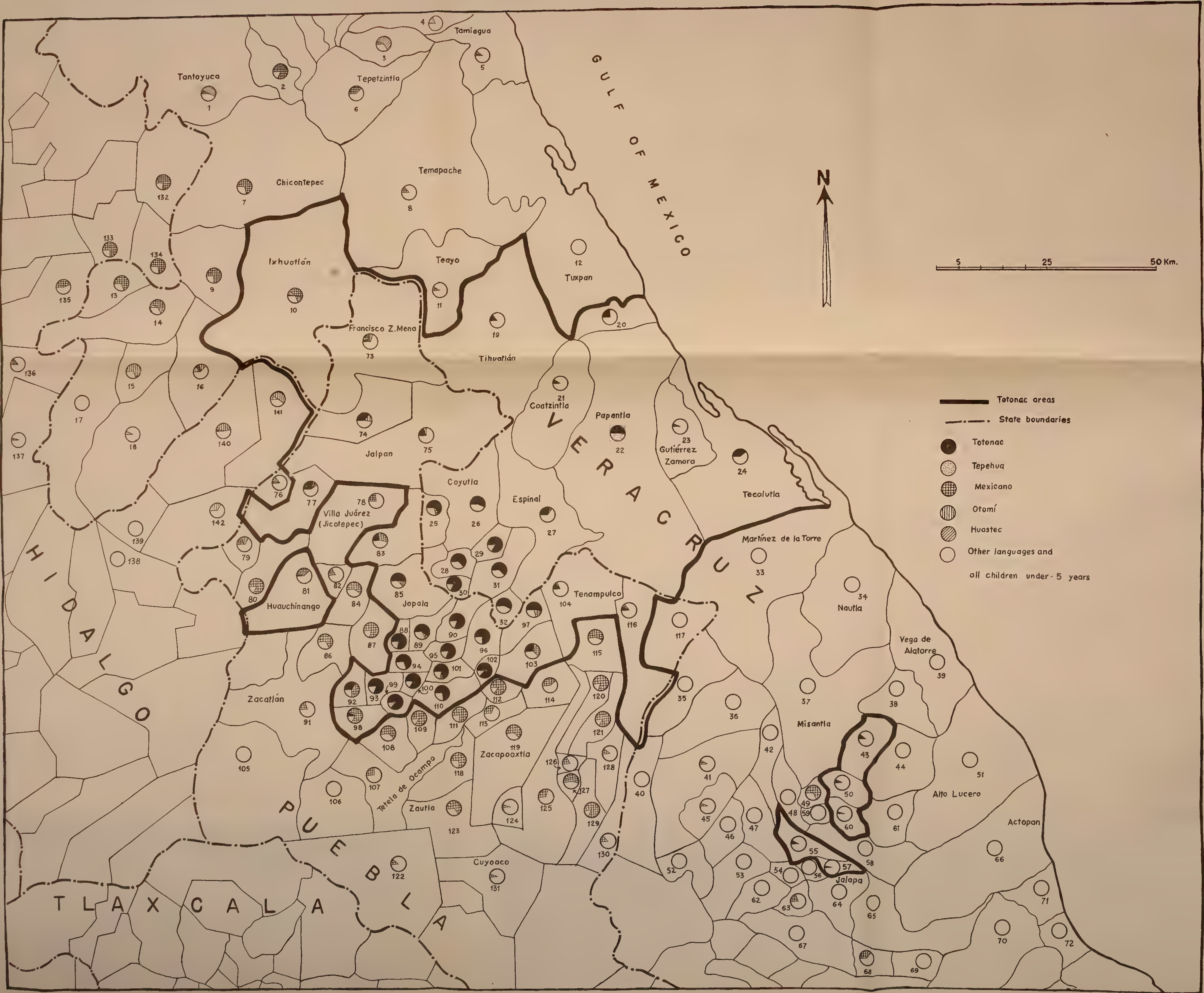
Table 15, of Appendix A, gives the key to municipal units, as well as the numerical basis for the language distribution here shown. The key to the five native languages of the area—Totonac, Tepehua, Mexicano, Otomí, and Huastec—appears on the map; other native idioms scarcely occur.

Within each municipal unit is a circle, whose sectors correspond in size to the percentages of the languages shown. Occurrences of less than 3 percent have been ignored because of the difficulty of depicting such a small area; they have been absorbed automatically by the white sector. However, table 15 gives all ratios which exceed 1 percent, as well as the complete incidence.

The white sector is essentially residual. We have just noted that it includes (*a*) occurrences of less than 3 percent of the native languages mentioned above. Apart from this negligible element, it corresponds to the percentage given in the last column of table 15. Thus it includes (*b*) all languages other than the five specified. In many municipal units, Spanish monolinguals are the chief ingredient, but there is a sprinkling of other Indo-European and of native languages.

Likewise, the white sector includes (*c*) all children under 5 years (5 *años cumplidos*), irrespective of speech. Although they are represented in the totals on which our percent ratios are based, their speech is not reported by the census. Through lack of foresight, we did not keep count of the number of children thus eliminated linguistically. In some pueblos, this age group accounts for 20 percent of the entire population. Accordingly, some of the municipal units along the Puebla-Veracruz border show a sizable white sector, although, actually, the communities are almost wholly Totonac. In fact, in Camocuautla (No. 100), the white sector is comprised exclusively of children under 5 years of age.

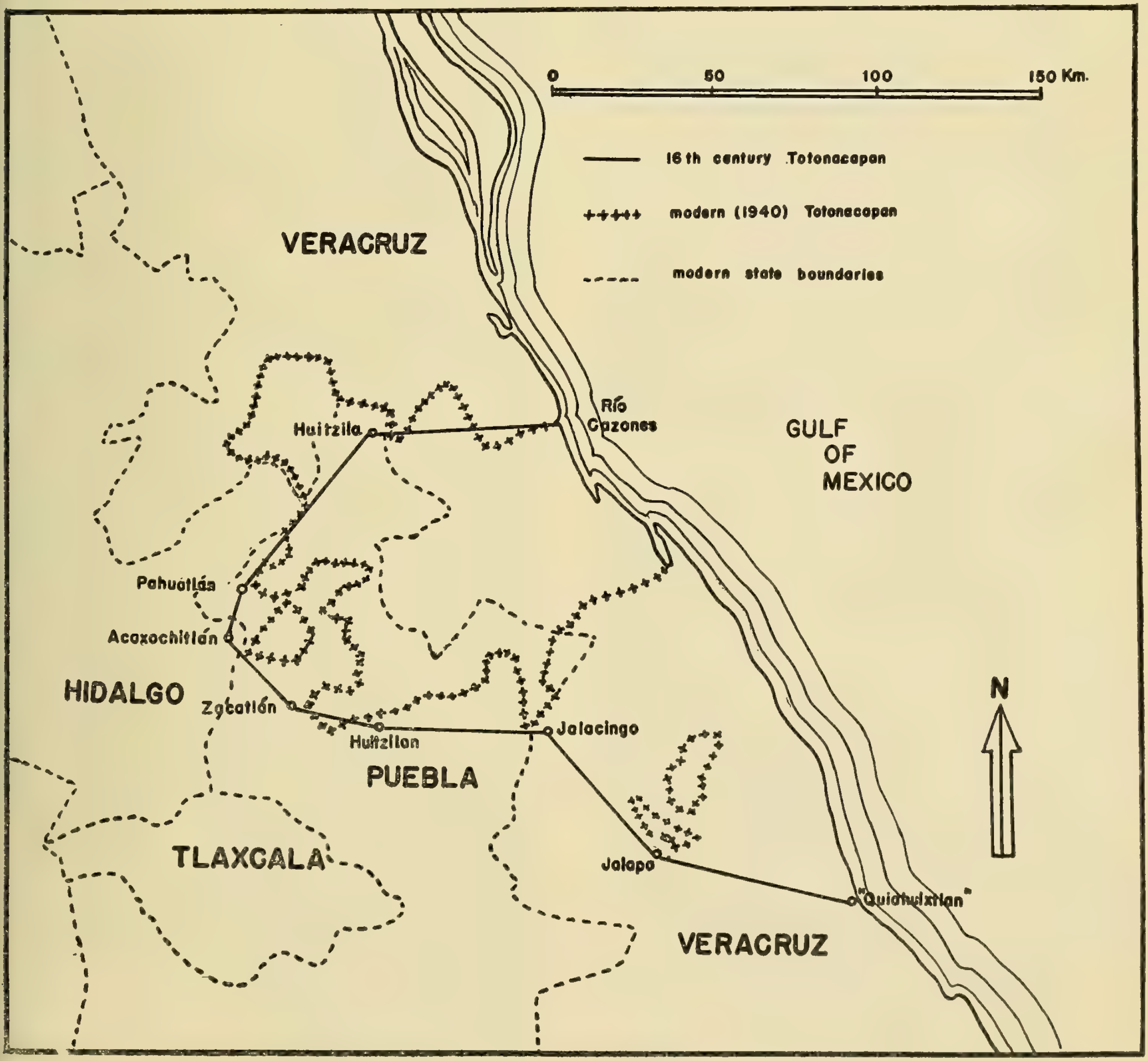
893477 O—52 (Face p. 12)



Map 2.—Modern Totonacapan.

(For legend, see p. 12.)

The northern frontier continues to present difficulties, which are more apparent than real. It will be remembered that sixteenth-century data are deficient and there are no early records of Totonac speech north of Papantla. However, we postulated (p. 5) a former extension to the Río Cazones, and thence to Huitzila. It would appear from map 3 that the modern boundary runs even farther north. Actually, only two municipalities are involved, Ixhuatlán and Tihuatlán. In these, Totonac speech is by no means general. In Ixhuatlán, all occurrences fall within the old Huitzila-Cazones frontier; and only in Tihuatlán a few settlements spill over the old hypothetical boundary. In short, despite the map, modern and ancient limits coincide pretty closely.



Map 3.—Sixteenth-century and modern Totonacapan compared.

The over-all limits of sixteenth-century Totonacapan have been taken from map 1, by connecting with a line the outermost pueblos of Totonac speech.

Modern boundaries are based on map 2 and give distribution by municipal unit, not by individual pueblo. In some cases, this results in an impression of greater extension than actually is the case, since—particularly in peripheral zones—Totonac is confined to one or two settlements and is not generally distributed throughout the municipal unit.

In the west, there has been a strong retraction in the vicinity of Pahuatlán, Acaxochitlán, and Zacatlán. The reduction is somewhat greater than map 3 suggests, inasmuch as Totonac pueblos are found today only in the eastern parts of the municipalities of Huauchinango and Villa Juárez. The abandonment by the Totonac of these highland areas has been noted previously (pp. 5, 10).

Numerically, the Totonac still are important. According to the published 1940 census, there are 59,242 Totonac monolinguals; our count, based on the original census sheets, yields 59,506 monolinguals, 30,872 bilinguals. In short, there is a total Totonac population of 90,378 persons, not including children under 5 years of age who in many communities constitute 20 percent of the inhabitants.

Of this Totonac population, 10,774 monolinguals and 6,948 bilinguals live in the district (*municipio*) of Papantla (total population: 34,257). In other words, even with small children excluded, Papantla today is about half Totonac. For the most part, the Totonac live in the small outlying settlements, although the town of Papantla itself has a significant element.[28]

Far higher percentages of Totonac are found along the still inaccessible parts of the Puebla-Veracruz border (map 2), where some communities are essentially monolingual. Yet of lowland areas, Papantla today has the strongest ingredient. This is of particular interest, for certain sixteenth-century sources (table 14, Appendix A) mention Mexicano in this zone, along with Totonac; and in the mideighteenth century, Villaseñor (1:319), almost certainly through error, reports only Mexicano. It is clear that in Papantla, Totonac has not yielded to Mexicano, as has been the case about Zacatlán; or to Mexicano and Otomí, as in Pahuatlán. In the Papantla area, the Totonac element still is substantial and probably will manage to hold its own for a good many years.

HISTORICAL BACKGROUND

ARCHEOLOGY

Since their discovery in 1785 (Gazeta de México, pp. 349–351), the ruins of Tajín have aroused the interest and admiration of all visitors, and a sizable bibliography has accumulated.[29] A study of local archeology is in itself a major undertaking, and, in large measure, our comments will be confined to a repetition of the conclusions which have been reached by other investigators.

In the immediate vicinity of the modern settlement of Tajín, the archeological ruins of that name are those of outstanding interest, because of their spectacular nature, their relative antiquity, and their external relationships. Apparently the occupation dates roughly from A. D. 600 (García Payón, 1947, p. 331), so was, at least in part, coeval with Teotihuacán. The Tajín center came to a violent end, presumably through conquest, about A. D. 1200, an approximate date which García Payón (1947, p. 305) assigns on the basis of ceramic association.[30] If we accept this dating, which appears reasonable, Tajín was destroyed a relatively few years after the abandonment, in 1156 or 1168 (Jiménez Moreno, 1942 b, p. 125), of Tula, the great Toltec site in modern Hildalgo.

Of the site of Tajín, only a relatively small part has been excavated; occupation was virtually continuous over a wide area, some of which still is forested. Moreover, surface sherds crop up in a number of clearings throughout the modern community, and sizable mounds still are half-hidden by the dense vegetation. Detailed and systematic surface collections have not been made in the immediate vicinity of Tajín, but it seems certain that sites later than the main ruin eventually will be recognized. In other words, although the main site was abandoned about A. D. 1200, the area as a whole was not. One plowed field, on the borders of Tajín, but actually within the political confines of adjacent Tlahuanapa, produces surface sherds whose painted decoration suggests affiliation with late wares from the nearby Huasteca.[31]

Of major archeological sites, Tajín is not the only one in the general vicinity of Papantla; García Payón mentions several others, as yet unexcavated. The famous Teayo, a few kilometers distant, certainly has major bearing on any local historical reconstruction. Evidently it is not, as once was believed, an "Aztec" site, but one with perceptible Tula affiliations. Essentially later than Tajín, its precise dating has not yet been established (García Payón, 1947, p. 303; Ekholm, letter of Oct. 29, 1948). At the moment, it is impossible to say whether it was founded as a local Toltec colony prior to the fall of Tula, when the latter still was vigorous culturally, or whether it was settled by Toltecs who moved from the plateau when Tula was abandoned. In any case, the presence of such a Toltec-affiliated site at no great distance from Tajín indicates that major influences from a post-Teotihuacán horizon in the central highlands must have reached the Papantla zone.

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[28] In 1804, Papantla was credited with a population of 2,837, of which 2,170 were Indians; 520, *gente de razón;* and 147, unspecified (Relaciones estadísticas de Nueva España pp. 44–45). In 1845, it was calculated that two-thirds of the inhabitants of the town of Papantla were Totonac (Bausa, p. 380).

[29] García Payón, 1943, has published a bibliography of works which touch directly and indirectly upon Tajín and the Totonac.

[30] Independently, Gordon Ekholm (letter of Oct. 29, 1948), gives the same tentative date.

[31] Ekholm (letter of Oct. 29, 1948) says that he has not studied this lot in detail, but his impression is that some of the "painted types . . . are as late as Period VI of the Huasteca, so . . . there is good possibility of post-building occupation around the site." DuSolier (pp. 7, 8, 41) also mentions decorated sherds of Huasteca type but considers them to be early and intrusive at Tajín.

Interpretation of the early phases of local archeology is closely linked to the so-called "Olmeca" problem, and there seems to be a general impression that the style of Tajín is related, directly or otherwise, to the "Olmeca" or La Venta culture. Covarrubias (1942, p. 48) sees a "distant but palpable" connection between the latter and the "so-called Totonac style." Caso (p. 46) goes so far as to say that "this great culture [Olmeca-La Venta] . . . without doubt is the mother of other cultures, such as the Maya, the Teotihuacán, the Zapotec, that of El Tajín, and others."

Of more specific affiliations, some investigators feel that not only is Tajín in large part contemporaneous with Teotihuacán, but that the two cultures are intimately related, ceramically and architecturally (García Payón, 1947, p. 305). In fact, it has been suggested that the Totonac—either as a dominant group or as a slave element—were present during the building of Teotihuacán (Jiménez Moreno, 1942 b, p. 141; García Payón, 1943, p. 20). Krickeberg (pp. 141–145) has made a valiant effort to summarize Teotihuacán-Totonac relationships; more recently, Jiménez Moreno has investigated the problem anew, but his material has not been published. It is highly desirable that information concerning such a basic relationship be put on record, the more especially since the resemblances are not obvious, at least to us, and inasmuch as a considerable amount of archeological evidence has accumulated since Krickeberg's report was written.

Logically, the alleged Teotihuacán-Tajín resemblances are explicable, at least in part, by the La Venta background, which presumably underlies both cultures. La Venta provides a common bond—whether Teotihuacán and Tajín are regarded as distinct offshoots from the common cultural tradition, or whether Tajín is regarded as La Venta derived, via Teotihuacán. So much for the current views, in very general terms, concerning the basic affiliations of the Tajín archeological site.

Opinion is divided concerning the speech of the builders of Tajín. Naturally, there is no assurance that they were related linguistically to the modern Totonac; theoretically, the latter might well be recent intruders in a zone formerly occupied by peoples of other affiliation.

Nevertheless, the linguistic distribution is suggestive. The island of Huastec speech, just to the north of the Totonac, long has been recognized as of Mayan affinity. And for many years it has been suspected that the contiguous Tepehua and Totonac were related to each other (Starr, p. 264; Krickeberg, p. 28). Recently, this relationship has been verified (McQuown, p. 37). Moreover, McQuown repeats anew the old impression that Totonac may be allied to Maya. Concretely, he suggests that Totonac-Tepehua and Mixe-Zoque, which comprise the Totonac-Zoquean family, are in turn to be regarded as one of the major divisions of a super-Mayan, or macro-Mayance family.

In view of the above, the interpretation suggested by Jiménez Moreno (1942 a, b) appears plausible. Approaching the problem from the viewpoint of the "Olmeca," he has shown that a variety of peoples, at different times, have borne this name. He suggests that the earliest group, which he calls pre-Olmeca, is to be identified with the La Venta archeological horizon and with Mayoid speech. His next group, the proto-Olmeca, would be Totonac-Zoque in speech, and chronologically would correspond to the earlier occupations at Teotihuacán and Tajín. Successively, "Olmeca" refers to other groups of peoples, which do not, at the moment, concern us.

In summary, we seem to be dealing with a development which is centered along the Gulf coast. Culturally, it may be Olmeca-La Venta derived; linguistically, it presumably is macro-

Mayance. From this supposed substratum the modern Totonac have diverged widely. Years ago, before the Olmeca achieved their current vogue, Krickeberg (pp. 145–158) envisaged pretty much the same panorama and attempted to trace relics of a Mayan cultural substratum along the Gulf coast.

LEGENDARY HISTORY

Of traditions concerning the early history of Totonacapan, no trace remains at Tajín, as far as we could determine. However, many of the old sources—mostly non-Totonac—contain references to the legendary history. Few mention the Papantla area specifically; several refer to Zacatlán, at one time a Totonac center in the Sierra de Puebla; and further data come from the modern Jalapa-Misantla area, in the State of Veracruz. Despite the fact that the sources are scattered and confused,[32] we shall attempt to formulate the picture for Totonacapan as a whole, relating the Papantla-Tajín area to it inferentially.

It has just been noted that the archeological evidence may be interpreted as implying close contact in remote times between Totonacapan and the central highlands; and legendary history, which starts with the Toltecs, similarly reveals relationships between coast and highland. For example, in their pre-Tula days, the Toltecs wandered extensively, reaching the "coasts and beaches" of the Gulf (Veytia 1: 153). Later, among other stops, they settled temporarily at Zacatlán, "Tuzapan" (near Papantla), and Tulancingo, before establishing themselves definitely at their great center of Tula (Veytia 1: 154–156), in the modern State of Hidalgo.

Their "empire" flourished, and the realm of Topiltzin, the last Toltec ruler at Tula, is said somewhat bombastically to have extended during its heyday "from one sea to the other" (Ixtlilxochitl 1: 88). But Topiltzin was an illegitimate son, and there were violent objections when he inherited the "Toltec empire," especially by three subject "kings" who were "from the provinces which lie on the coasts of the Gulf" (Ixtlilxochitl 1: 472).[33] Owing in part to the uprising of these dissenters, Tula was destroyed, in A. D. 1156 or 1168 (Jiménez Moreno, 1942 b, p. 125).

The surviving Toltecs scattered, some going to "Tozapan, Tochpan, Tziuhcoac y Xicotepec" (Ixtlilxochitl 2: 37). This brought them to the fringes of Totonacapan, in Tuxpan and in old "Tzicoac," and within its limits, in "Tuzapan," near Papantla, and in "Jicotepec" (modern Villa Juárez). Years later, it was said that there were surviving Toltecs "on the coasts of the South and North sea" (Ixtlilxochitl 1: 89). If the ruins at Teayo prove to be post-Tula, they lend credence to this legendary dispersal; in any case, they indicate a center of Toltec influence in the Papantla area.

Others of the Toltec survivors (generally called the Tolteca-Chichimeca) conquered Cholula, in the modern State of Puebla (Jiménez Moreno, 1942 b, p. 126; Kirchhoff, 1947, p. xxvii). At that time, Cholula was occupied by a people designated as "Olmeca." They were dislodged by the Toltec conquest and one group, called the Olmeca-Zacateca, migrated to Zacatlán, in northern Totonacapan; another, the Olmeca-Xicalanca, went to the southern coast of the Gulf of Mexico (Jiménez Moreno, 1942 b, p. 126; Kirchhoff, 1940, pp. 99–100). The conquest of Cholula still was not complete. Allies of the ousted Olmeca continued to battle with the Toltecs, and eventually the latter imported seven tribes of Chichimecs to assist them.

The Toltecs, weakened and scattered, ceased to play a major role, and there is no further reference to them in connection with Totonacapan. It is curious that the Totonac sources make no mention of the arrival of the Olmeca-Zacateca at Zacatlán. They report incursions by Chichimecs, but the culture of the latter was far too simple (Torquemada 1: 279) to permit identification with the Olmeca-Zacateca; moreover, as will be seen below, assuredly the Chichimecs were new-comers from the west or north. Nor can the Olmeca-Zacateca be identified with the original Totonac settlers[34] mentioned in the traditions quoted below, for their appearance on the scene was essentially late, subsequent to the fall of Tula. Such a possibility has been considered by Krickeberg (pp. 138–139) but discarded by him on linguistic grounds. Despite the silence of the Totonac sources concerning the Olmeca-Zacateca, it must be assumed, owing to the time element, that they moved to Zacatlán when the latter already was populated by the Totonac.

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[32] Manifestly, the ordering of these early data is a job for the specialist, but since none of the latter has published a general collation or interpretation, we have no choice but to struggle individually with the early sources. To reduce the inevitable confusion to a minimum, details such as personal names have been omitted from the text insofar as possible.

[33] In this connection, Ixtlilxochitl (1: 67) mentions specifically "Quiahuixtlan" and "Anahuacac." At the time of the Spanish Conquest, "Quiahuixtlan" was an important Totonac settlement on the coast near "Cempoala"; and Anahuac apparently is an old name for both the east and west coasts (Sahagún 2: 341, 354–355; Chavero, in Muñoz Camargo, ftn. 2, pp. 34–35; Siméon, in Chimalpahin, ftn. 3, p. 174) as well as for the Valley of Mexico.

However, Veytia (1: 189, 198) appears to place "Quiahuixtlan" and the rebel "kings" in western Mexico; he mentions "toda la costa del mar del Sur, hasta más adelante de Jalisco . . ." (cf. ftn. 27, map 17).

The identity of the Olmeca-Zacateca has been discussed by Jiménez Moreno (1942 b, pp. 127–129). He regards them as originally of Popoloca-Mixteca speech, profoundly influenced by Nahua, and suggests that their migration to Zacatlán may explain the presence of Nahuat[35] in that area today.

With the destruction of Toltec power and with the arrival on the scene of the Chichimecs, a new cycle of traditions is started; legendary history becomes somewhat fuller, and there are data from local sources, as well as from the central highlands. In them we find persistent mention of a Chichimec colonization, often described as an overlay on an earlier population.

Such an account comes from two pueblos, Cuautenco and Totutla, subject to Tetela, in the Sierra de Puebla. Although in the sixteenth century, both pueblos were Mexicano in speech, both reported an ancient Totonac substratum. Summaries follow:

> *Cuautenco.* This pueblo was occupied by Totonac—so-called because "they came from where the sun rises"—over 763 years ago [that is, prior to 1581]. Then came four individuals who conquered the Totonac; they were the same as those who peopled Tetela; elsewhere (5:145) it is said that the settlers at Tetela were from the west, from a province of Chichimecs. Once subjugated by the intruders, most of the Totonac left; a few, with their wives, remained as subjects of the Chichimecs. The arrival of the latter was said to have taken place more than 363 years before [1581] (Paso y Troncoso 5:152).
>
> *Totutla* informants made substantially the same statement. One of the descendants of the four Chichimec conquerors came to Totutla to find the site heavily populated "by a great quantity of people who today are called Totonac." For the latter term, the same derivation was given, also the same date for the original Totonac occupation. After the conquest, the Totonac withdrew gradually, but some remained and intermingled with the new settlers. Totutla informants placed the date of the Chichimec incursion at "more than three hundred years" before [1581] (Paso y Troncoso 5: 167–168).

In 1580, Totonac informants at Tlacolulan, near Jalapa, gave a somewhat similar account:

> The original Totonac were four. They emerged from the sea and, as their numbers increased, they founded 13 settlements within a range of 6 leagues. This Totonac population enjoyed 400 years of peaceful existence before it was conquered by the Chichimecs. The latter occupied a dominant position for 109 years, until the arrival of the "ambassadors" of Moctezuma, to whom they gave tribute and "obedience." Mexican supremacy endured until terminated by the Spanish Conquest (Paso y Troncoso 5:108).

In 1600, Torquemada (1: 281), who at one time was head of the Franciscan station in Zacatlán (3: 203), conferred personally with Totonac informants and recorded a distinct version (1: 278–280). Krickeberg (pp. 63, 133) is inclined to consider this tradition of scant importance, because it is essentially local and concerns a restricted area in the immediate environs of Zacatlán. Nevertheless, it seems to represent a sort of general pattern, which is applicable to much of Totonacapan. A summary of Torquemada's account follows:

> The Totonac emerged from the famous site of Chicomoztoc, or Seven caves, in company with the Xalpaneca, leaving the Chichimecs within the cavern. They proceeded to Teotihuacán, where they remained sufficiently long to construct the Pyramids of the Sun and the Moon; they then continued to "Atenamitic," said to be at the site of historic Zacatlán.[35a] Four leagues beyond, they

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[34] However, there is a suspicious similarity in the name of Ulmecatl, the chief of the Olmeca (Veytia 1:107) and Umeacatl, the chief of the original Totonac settlers at Zacatlán (Torquemada 1:278). But since the chief of another group, the Olmeca-Uixtotli, was called Olmecatl Uixtotli (Sahagún 3:139), it would appear that this calendar-derived name (translated Two-cane) enjoyed great popularity. It was also the name of the Mexican god of fiestas (Sahagún 1:35).

[35] That is, the form which uses "t" instead of the more common "tl."

[35a] We questioned about a dozen Zacatlán residents concerning "Atenamitic." Most did not recognize the word. However, two were under the impression that Atenamitli is an alternate name for the small archeological site generally known as San Pedro.

The site is a short distance upstream from modern Zacatlán and, like the latter, is perched perilously on the edge of the great barranca. It is said to be situated at the confluence of two tributary streams, the San Pedro and the San Miguel. Unfortunately, time did not permit first-hand inspection of the archeological zone, and we viewed it from the road, a few hundred meters distant. It apparently consists of a small artificial mound, topped by a cross, and adjacent are the ruins of what must have been a sizable masonry building, presumably colonial.

settled a particularly rugged spot, which appealed because of its defense possibilities.

From this site, called "Mizquihuacan" [modern San Francisco Ixquihuacán?], the Totonac spread until they peopled a great stretch of highlands and extended their domain to the coast. Tradition lists 10 generations of "chiefs," with succession from father to son. Each is said to have reigned precisely 80 years—a remarkable feat at which Torquemada marvels, at the same time assuring the reader that it has been "proved by very authentic and creditable histories."

During the term of the second chief, the Chichimecs appeared as a threatening cloud in the west and established themselves at "Nepoalco," 6 leagues from "Mizquihuacan."[35b] They were poor, naked, and ate raw meat. The Totonac received them kindly, instructed them in the arts of clothing themselves and of preparing their food. Amicable relations, thus established, continued for some centuries.

Following the death of the eighth Totonac chief, his two sons ruled jointly. But this dual arrangement was not successful; the Totonac were divided in their allegiance and were weakened by civil war. The Chichimecs, now numerous, took possession of Totonac territory and from that time treated the Totonac as their "vassals and subjects."

The Chichimec dominance later was followed by Mexican control. Regardless, the Totonac line of "chiefs" was not forgotten. One of the brothers of the ninth generation left a son; and the son of the latter accepted Christianity, thus bringing the Totonac "dynasty" to the time of the Spanish Conquest.

Although at variance with respect to the origin of the Totonac, the Tlacolulan and Zacatlán accounts agree concerning Chichimec dominance, followed by Mexican conquest. In addition, the sixteenth-century *relaciones* both of Zacatlán and Misantla mention a Chichimec peopling of Totonacapan, although in this case, the Chichimecs apparently appear in the role of original settlers.

In short, several independent sixteenth-century sources record a Chichimec invasion of Totonacapan, without providing specific clues concerning the identity of the intruders. The term "Chichimec" is applicable to any Mexican people of nonsedentary, rustic culture (Mendieta 4: 188; Durán 1: 13; Muñoz Camargo, p. 28), not necessarily to a determinable linguistic or political entity. Sahagún (3: 120) indicates that the Chichimecs were of diverse speech, and the internal evidence suggests the same (Kirchhoff, 1947, pp. xxxi–xxxii). It seems pretty apparent that the term was applied successively to quite distinct peoples in the course of the centuries. As the earlier groups of Chichimecs absorbed the culture of the sedentary populations with which they came in contact, the designation no longer was applicable and was used, in turn, to indicate other nomadic peoples.

However, it is evident from non-Totonac sources that the Chichimecs in question—or at least one group of those in the Zacatlán zone—are to be identified with the followers of Xolotl, a semilegendary leader who founded a long dynasty, first at Tenayuca and later at Texcoco, in the Valley of Mexico.[36]

Once established at Tenayuca, Xolotl extended his power to "Tenamitic," which is the "Atenamitic" of Torquemada (Boban 1: 75; Radin, p. 41); and his two grandsons[37] took possession of "Tenamitic" and Zacatlán respectively (Boban 1: 109; Ixtlilxochitl 1: 97, 104, 269, 475, 2: 45; Torquemada 1: 63; Veytia 1: 258–259). At the same time, the Chichimecs apparently occupied Huauchinango, which was at least in part Totonac during the sixteenth century, as well as other pueblos in the same general area, but outside the bounds of Totonacapan (Torquemada 1: 45).

Supposedly, the Chichimecs of Xolotl were of Otomian speech (Jiménez Moreno, 1942 b, p.

[35b] Below Zacatlán, at a point just upstream from Axaxalpa, the east slope of the great barranca is known today as Nepopualco. The latter cannot be identified with Torquemada's "Nepoalco," provided we are correct in suggesting that "Mizquihuacan" is to be identified with modern Ixquihuacán. Torquemada places "Mizquihuaçan" 4 leagues from Zacatlán and 6 from "Nepoalco." Ixquihuacán is slightly less than the specified 4 leagues but is, at most, a league from modern Nepopualco.

[36] Traditionally, the Chichimecs came out of the north. The original seat of Xolotl apparently was located in the Huasteca, immediately north of Totonacapan, and his wife, Tomiyauh, was designated as "Señora de los Cuextecos" and "Señora" of the provinces of "Panuco, Tampico y Tamiyauh" (Ixtlilxochitl 1: 268, 277). In this identification Veytia (1: 229, 245) concurs.

[37] Ixtlilxochitl is not consistent in the naming of these two grandsons. The one who became leader at Zacatlán he calls, upon different occasions: Toxtequihuatzin, Totzin, Atencatzin, and Huixaquen (1: 97, 104, 269; 2: 45). Similarly, his first Chichimec ruler at "Tenamitic" is named: Apotzoctzin, Toxtequihuatzin, Tloxtequihuatzin, and Cozanatzin.

Ixtlilxochitl apparently contradicts himself concerning Toxtequihuatzin. Despite his assortment of names, none of the latter agrees with that given by Torquemada (1: 280) for the first Chichimec ruler at Zacatlán, namely Xihuitlpopoca. However, much later, Ixtlilxochitl (1: 136) lists Xihuitlpopoca as "Señor de Zacatlan"—not in the days of Xolotl, but at the beginning of the reign of Techotlalatzin, the fifth Chichimec ruler.

The discrepancy between the two sources may be chiefly one of time, attributable perhaps to the short memory of Torquemada's informants. Or it may be that the Chichimec conquest was not really effective until many years following the death of Xolotl.

126).[38] In any case it would appear that they were not Nahuan. For example, the son of Xolotl, upon meeting a stray Toltec in the Valley of Mexico, was forced to communicate with him by signs (Torquemada 1:44). Probably it is safe to assume that the Toltecs were Nahuan. Sahagún (3:115) states so definitely, and it is said that the two languages used generally in all the "Chichimec empire" were "*Tulteca*, which is called *Mexicana*," and "Chichimeca" (Ixtlilxochitl 1: 482). Allegedly, the Chichimecs did not speak Mexicano generally until the time of Techotlalatzin, their fifth ruler (Ixtlilxochitl 2:73).

These early Chichimec invaders, supposedly Otomian, were reinforced by the arrival of a subsequent (Torquemada 1:258, 261) group, usually called the Teochichimecs. Torquemada (1:261) says flatly that they were "those whom nowadays are called Otomi." [39] Nevertheless, it appears that the Teochichimecs, like the earlier Olmeca-Zacateca, became Nahuatized. Sahagún (3:116) has them acquire both the Otomí and Mexicano languages; Chavero (in Muñoz Camargo, ftn. 4, p. 55) concludes that the original Teochichimecs were not Nahuan but that they learned the language through contact with Mexicano-speaking peoples. Such a situation might be significant in explaining the bilingual character of Totonacapan at the time of the Discovery, for the Teochichimecs settled various pueblos, which, a few centuries later, were within Totonac territory. These included "Tuzapan," Papantla, "Tonatico," Chichilintla, Nautla, "Cempoala," and Jalpan (Torquemada 1:262, 264, 269).

Torquemada (1:264) identifies the Teochichimecs with the Chichimecs who conquered the Totonac realm about Zacatlán and "Tenamitic." Since he does not distinguish two waves of intruders in Zacatlán, it must be assumed that the two groups—possibly allied in speech and in cultural antecedents—became amalgamated. It seems highly probable that the Chichimec invasion—if not the immediately subsequent Teochichimec incursion—accounts for the presence in historic times of the small island of Otomí speech just south of Zacatlán (Orozco y Berra, 1864, map facing p. 392).

The conquest of Zacatlán must date from the late twelfth or early thirteenth century. The 1581 informants at Cuautenco and Totutla, near Tetela, placed the arrival of the Chichimecs in the Sierra de Puebla during the thirteenth century (Paso y Troncoso 5:152, 168). Although the dating is approximate, it agrees with other evidence. Xolotl and his band moved into the environs of the Valley of Mexico following the fall of Tula (in A. D. 1156 or 1168), for they found the site already in ruins (Ixtlilxochitl 1:83; Torquemada 1:42). Ixtlilxochitl (1:84, 474) would have them arrive 5 years after the destruction of Tula. The second group, the Teochichimecs, appeared on the scene shortly thereafter.

In other words, the arrival of these invaders in Totonacapan accords surprisingly well with the date (between A. D. 1180 and 1230) calculated for the destruction of the ancient center of Tajín (García Payón, 1947, p. 305). Apparently there is no mention of the Papantla area in connection with the Chichimecs of Xolotl; but the Teochichimecs are said to have peopled a great stretch of country, and among their settlements, Torquemada (1:262, 269) twice mentions "Tuzapan" and Papantla. Perhaps then the destruction of Tajín is attributable to the Teochichimecs rather than to the Chichimecs of Xolotl, although the difference is slight if, as suggested above, the two groups became fused at Zacatlán.

In summary, tradition indicates that the Toltecs were not without ties in Totonacapan—ties which are confirmed by the Tula-affiliated site of Teayo, not far from Papantla. In the years following the fall of Tula and the destruction of Toltec power, the population of a great part of Mexico seems to have been extraordinarily fluid. Legends record mass migrations from one area to another, and with each settlement of immigrants, dislocation of earlier inhabitants.

In the Zacatlán region of the Sierra de Puebla alone, there is recorded the arrival of three immigrant groups, evidently within the span of a few years following the destruction of Tula. Here, the early Totonac population was overrun by the Nahuatized Olmeca-Zacateca; shortly thereafter, by the apparently Otomian Chichimecs of Xolotl;

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[38] At least one group of later immigrants which affiliated itself with Xolotl is said to be Otomí (Boban 1:76; Ixtlilxochitl 1:94; Veytia 1:254); but Ixtlilxochitl (2:41) considers their language "very strange and different."

[39] Elsewhere (1:258), Torquemada adds to the confusion by stating that the Teochichimecs came in search of "los primeros Chichimecas, Aculhuas, Tepanecas, Chalmecas, Hulmecas, y Xicalancas, Deudos, y Parientes suios."

and, on their heels, by the Teochichimecs, who either were Otomí, or Otomí who had become Nahuatized.

On the whole, these traditions accord relatively well with the distribution of native speech in the Zacatlán area and may, in part, explain the presence of Mexicano cheek by jowl with Totonac in much of Totonacapan at the time of the Discovery. Morover, the supposed date of the Chichimec-Teochichimec incursions accords well with that given by archeologists for the destruction of ancient Tajín. In a broad sense, therefore, there is indirect confirmation of legendary history.

Unfortunately, the Papantla-Tajín zone, which interests us most, seldom is mentioned specifically in connection with these movements of peoples. There are traditions of temporary Toltec settlement at "Tuzapan," in the lowlands near Papantla. And the Olmeca-Zacateca also may have reached "Tuzapan."[40] It is impossible to say how widespread were the effects of the Olmeca-Zacateca migration in Totonacapan. At the time they left Cholula, the related Olmeca-Xicalanca moved southeast to the Gulf coast, but apparently their route lay well to the south of Totonacapan.

The succeeding migration, that of the Chichimecs of Xolotl, cannot be associated directly with the Papantla-Tajín zone, but was concentrated about Zacatlán, in the Sierra de Puebla. Unidentified Chichimec conquerors settled Cuautenco and Totutla, near Tetela, likewise in the Sierra do Pueblo; Tlacolulan, near Jalapa; and Misantla.

The next group of intruders, the Teochichimecs, pushed into the lowlands and peopled Papantla and "Tuzapan"; they also occupied "Tonatico," Chichilintla, Nautla, "Cempoala," Jalpan, and Metztitlán (Torquemada 1:262, 264, 269).[41] Metztitlán definitely was non-Totonac. The other pueblos were included in sixteenth-century Totonacapan, although before the Spaniards arrived on the scene, the Triple Alliance had established a garrison at Nautla.

The Chichimec-Teochichimec incursions not only penetrated Totonacapan, but also extended far beyond its bounds. According to Ixtlilxochitl (1:88, 474), the territory of Xolotl, the first Chichimec leader, included parts of the Huasteca, as well as the hinterland of Totonacapan, about Perote (Poyauhtecatl; Torquemada 1:262). The Teochichimecs, from their base in Tlaxcala, settled Jico (old "Xicochimalco"), southwest of Jalapa, beyond the limits of Totonacapan; and, together with the Aculhua, they peopled "Cohuatçaqualco, Cempohuallan . . . y toda la Huaxteca de Panuco" (Torquemada 1:263, 269). Torquemada's combined statements, together with those of other sources, would have Chichimecs and/or Teochichimecs scattered throughout Totonacapan and established, to boot, in an area just to the south (Jico and Coatzacoalcos) and immediately to the north (Pánuco), as well as in the hinterland.

Under the circumstances, it seems logical to conclude that at one time or another, virtually all of Totonacapan was affected by successive waves of invaders and that the modern Totonac—probably in blood, in culture, and perhaps in language—represent the fusion of an old population with subsequent invaders. Under the circumstances, the chances of a perceptible survival of the early Olmeca-La Venta culture among the modern Totonac are pretty slim (Mayas y Olmecas, p. 81).

MEXICAN CONQUEST

Before the Discovery by the Spaniards, Totonacapan was subjected to still another conquest, namely that of the Mexica. Essentially late, this conquest seems to have been largely political and commercial. There is no mention of actual settlement, although garrisons were established at key points; and the Mexicans appear to have concentrated their efforts on collecting tribute.

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[40] Kirchhoff (1940, map 4) carries this group as far northeast as "Tuzapan" presumably on the authority of Muñoz Camargo. However, in the latter source we have been unable to find any statement which would warrant such interpretation.

[41] Muñoz Camargo (p. 45) describes this same colonization, attributing it to the "Chichimecs"—a term under which he cozily and ambiguously unites Tolteca-Chichimeca, Chichimec, and Teochichimec (Kirchhoff, 1940, p. 98). His use of the same term for quite distinct groups of peoples results in pitfalls for the unwary, for which reason we have not dared rely very heavily on his data.

In this particular case, however, he evidently is speaking of the peoples whom Torquemada calls Teochichimec. He mentions precisely the same pueblos, and in the same order, from which it may be guessed that Torquemada copied from him. Chavero (in Muñoz Camargo, ftn. 1, p. 19) indicates another passage which Torquemada presumably lifted from the same source.

Both authors date from the late sixteenth century, with Muñoz Camargo probably somewhat earlier. Carrera in Díaz-Thomé et al., p. 103) believes that he wrote between 1576 and 1595; Veytia (1:287) places the date about 1585. We have not been able to discover when Torquemada started work on the history to which he is said to have devoted 20 years (Clavijero 1:29), but he himself states that his Totonac data were recorded in 1600. The first edition of Torquemada appeared in 1614 (Clavijero 1:29) or in 1615 (Beristain 3:185).

With the Mexican conquest of Totonacapan, we emerge from the realm of pure tradition, for the Mexica were in nominal control of Totonacapan when the Spaniards arrived. Moctezuma's tribute collectors were to be found all along the Gulf coast and, as a matter of fact, descended upon "Quiahuixtlan," precisely at the time the Spaniards were being entertained royally by the Totonac of that pueblo.

ANTECEDENTS

Following the aggression of the Chichimecs and Teochichimecs, Totonacapan seems to have enjoyed relative freedom from highland pressure for approximately 200 years, that is to say, until the middle of the fifteenth century. At least, the ancient sources make scant mention of Totonacapan during that time. This is understandable, for these are precisely the years when the balance of power in the Valley of Mexico was being established—the years which saw the long struggle for supremacy between Azcapotzalco and Texcoco; the years when the Mexica were beginning to come into their own; the years when the so-called Triple Alliance between Mexico, Texcoco, and Tacuba was born. It is clear that the peoples of the Valley of Mexico were amply occupied with local problems.

Moreover, these two centuries of relative peace must have been years of adjustment in Totonacapan; years when the recent Olmeca-Zacateca and Chichimec-Teochichimec invaders were absorbed; years during which the culture we know as Totonac was formed. Too, it was the time when "Cempoala," the sixteenth-century Totonac center on the coast of Veracruz, grew to importance, having been founded approximately at the time Tajín was destroyed (García Payón, 1947, pp. 331, 332). All told, the silence of the ancient sources concerning highland-coast relationships during this period probably is not the result of oversight; the internal evidence suggests major activity localized in the Valley of Mexico and, at the same time, a period of adjustment and advance in Totonacapan.

During this era, Tlaxcala emerged as a power in the central highlands. As at Cholula, its early population was called Olmeca ("Hulmecas, y Çacatecas"; Torquemada 1:263). It was dislodged, but in this case, by the Teochichimec invaders, who established themselves at Tlaxcala and who thereafter were known as the Tlaxcalteca. Tlaxcala appears to have played a minor role until the days of Netzahualcoyotl (1431–72), a famous Chichimec ruler at Texcoco, at which time it appeared as his supporter and ally (Ixtlilxochitl 2:140, 195, 203).

Perhaps the common Teochichimec background at Tlaxcala and in parts of Totonacapan contributed materially to amicable relations between these two provinces. But whether or not it was based on a feeling of affinity, it is clear that a long-enduring friendship existed,[42] as well as a sprightly commerce. When, finally, the Triple Alliance undertook the conquest of Totonacapan, there was a further bond between Tlaxcala and Totonacapan: enmity toward the Mexicans.

There is no record of a Tlaxcalan conquest of Totonacapan.[43] Relationships appear to have been basically commercial, although there are several indications of military commitments (as, for example, in the Cotaxtla campaigns, which will be mentioned later). Owing to its limited natural resources, Tlaxcala was obliged to look to the lowlands for certain merchandise: gold, cacao, cotton, honey, wax, feathers, and salt (Muñoz Camargo, pp. 105, 111). To obtain these products, its merchants trafficked from the Gulf to the Pacific. At first, they traded side by side with the Mexicans, on amicable terms. Later, acute rivalry developed (Muñoz Camargo, pp. 105–108), with Totonacapan and other coastal provinces a chief bone of contention. Torquemada[44] states flatly that the main reason for the Mexican conquest of the lowlands was the disruption of Tlaxcalan commerce.

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[42] A friendship which endured through the Spanish Conquest and which was of utmost importance to Cortés, who exploited it thoroughly.

The only hint of friction between Tlaxcala and Totonacapan is found in a statement, made in 1581, by informants at Zacatlán. According to them, Moctezuma aided them in their wars with Tlaxcala (Relación de Zacatlán).

[43] Muñoz Camargo (p. 70; repeated by Torquemada 1:161, 269) makes grandiose statements concerning the Tlaxcalan settlement of a great part of Totonacapan and adjacent zones. This we have interpreted as applying to an early Teochichimec occupation, pre-Tlaxcalan, in the strict sense of the word. But if Muñoz Camargo chooses to identify the Tlaxcalans with their Teochichimec forbears, as apparently he has done, he might justifiably make such a claim.

[44] ". . . procuraron de apoderarse de toda la Totonacapan, y de las provincias de los Tohueios, Xalapanecas, Nauhtecas, Mexcaltçincas, y otras muchas que caen, àcia la Costa, y Mar de el Norte que son muchas, solo, á fin de impedir la entrada, que podian hacer estos Tlaxcaltecas, en ellas, estorvandoles las Contrataciones, y Grangerias, que tenian en todas estas Tierras" (Torquemada 1:198).

During this same era of peace in Totonacapan, when the Tlaxcalans were developing a profitable trade in that province, Texcoco also came into the picture. If Tlaxcala shared a common Teochichimec tradition with Totonacapan, Texcoco could claim a joint Chichimec bond. The ruling family at Texcoco was Chichimec—lineal descendants of Xolotl, the Chichimec ruler, who conquered and settled the Totonac zone about Zacatlán.

By the time that Mexican designs were directed toward Totonacapan, Texcoco already held several key towns on its fringes. Since the days of the first Chichimec rulers, Tulancingo was considered their property; it is mentioned frequently, chiefly because it revolted with monotonous regularity (Torquemada 1:66; Ixtlilxochitl 1:287, 2:196, 199). Likewise, Texcoco apparently counted among her possessions Huauchinango (Ixtlilxochitl 1:136, 2:196), "Jicotepec" (now Villa Juárez) (Ixtlilxochitl 2:177, 196), Pahuatlán, Tlacuilotepec, and Pápalo (Torquemada 1:167)—all of which contained elements of Totonac speech during the sixteenth century.

Moreover, when Netzahualcoyotl, the Chichimec ruler of Texcoco (1431–72) subdued Tulancingo, Huauchinango, "Jicotepec," and "all the sierra of Totonapan [Totonacapan]," it was said that this terrain was part of his patrimony (Ixtlilxochitl 2:196), presumably implying Chichimec heritage. The same claim was made with respect to the alleged conquest[45] by Netzahualcoyotl of Tuxpan and "Tzicoac," two important pueblos in the Huasteca.

In any event, it is clear that Texcoco held the three key towns of Tulancingo, Huauchinango, and "Jicotepec." During the sixteenth century, the two latter were in part Totonac; all three lay on the main route to northern Totonacapan, and through them there was easy access to the southern Huasteca. Moreover, Texcoco controlled a scattering of towns on the northwest borders of Totonacapan and evidently continued the old Chichimec grasp of the highland Totonac country about Zacatlán (Ixtlilxochitl 2:196).

The stage now was set for the Mexican conquests. Under early leaders, the Mexicans participated in combats on the fringe of Totonacapan—presumably not independently, but as vassals of Azcapotzalco. However, under Itzcoatl (1427–40), the Mexicans gained their independence, and the famous Triple Alliance was formed, with Tenochtitlan, Texcoco, and Tacuba as collaborators. Mexican expansion started, but not until the elder Moctezuma succeeded Itzcoatl are there records of campaigns which affected Totonacapan directly. Below is a brief summary of such Mexican conquests, and a much more detailed account appears in Appendix B.

MOCTEZUMA I (1440–69)

The first great era of Mexican expansion toward the Gulf took place during the reign of the elder Moctezuma, whose aggressions in that zone comprised three major campaigns—one in the Huasteca, and two in the area of Cotaxtla—the former on the northern and the latter on the southern frontier of Totonacapan.

With his campaign in the Huasteca, Moctezuma established a wedge of Mexican influence just north of Totonacapan; but his conquests were far from enduring, and his successors had to resort to frequent junkets to quell rebellions. Despite proximity to northern Totonacapan, there is no indication that the latter was directly affected.[46] In fact, it is quite clear that Papantla, for example, was able to maintain independence until half a century later, when it was subjugated by the younger Moctezuma (p. 23).

Southern Totonacapan did not fare as well, and as a byproduct of Moctezuma's first campaign against Cotaxtla, its important centers—"Cempoala," "Ozeloapan," and "Quiahuixtlan"—came under Mexican rule. Cotaxtla revolted recurrently thereafter, both during the reign of Moctezuma and subsequently, but there is only passing mention of Totonac participation (Tezozomoc,

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[45] Alleged conquest, because it appears that this campaign was of the Triple Alliance, not of Texcoco personally. Perhaps "Tzicoac" and Tuxpan, where Netzahualcoyotl placed his tribute collectors (Ixtlilxochitl 2:196–197), represented his share of the joint booty. In any case, an impartial source (Códice Chimalpopoca, p. 64) states that during the reign of Netzhualcoyotl and that of his successor, Pantlan was part of the Texcocan realm; and Pantlan is an old alternate name for Pánuco-Huasteca (Sahagún 3:130).

[46] In addition, four pueblos whose identification is problematical, may have lain on the peripheries of northern Totonacapan (ftn. 36, p. 268). None of these appears to have been Totonac, and we find no evidence to suggest that northern Totonacapan as a whole came under Mexican hegemony at this time, as Barlow (1947 a, map 4) appears to contend.

p. 142). The initial conquest of southern Totonacapan apparently was enduring.

AXAYACATL (1469–81) AND TIZOC (1481–86)

Moctezuma's successor, Axayacatl, indulged in a series of scattered conquests, some in the Gulf coast area. He quashed a rebellion in Cotaxtla and, apparently toward the end of his reign, another in the Huasteca. But southern Totonacapan continued under Mexican control and northern Totonacapan still was inviolate.

Tizoc, the successor of Axayacatl, was not particularly successful as a military leader. He apparently subdued Cotaxtla and the southern Huasteca anew, but there is no evidence that Totonacapan was directly concerned. His other campaigns were not directed toward the Gulf.

AHUIZOTL (1486–1502)

Ahuizotl was extremely active, and although he extended Mexican conquests far to the south (map 17, Appendix B), he still found time to conduct a number of campaigns in the Huasteca. In the course of one of these, the Totonac pueblo of "Tuzapan" succumbed (p. 275).

During his reign, further penetration of Totonacapan seemingly took place, with the conquest of Nautla, on the Gulf coast. However, this victory is mentioned only by Texcocan sources, which claim the conquest for their ruler, Netzahualpilli.

Cotaxtla appears to have been at peace, but the nearby pueblo of "Mictlanquauhtla" was subjugated. This conquest, together with those of "Tuzapan" and Nautla, suggests fairly extensive military action along the east coast; but the sources give no further details.

MOCTEZUMA II (1502–20)

The younger Moctezuma continued the program of expansion, especially toward the south (map 18, Appendix B). During his reign, the Huasteca appeared to enjoy a respite, but northern Totonacapan suffered in its stead. The Mexican sources list among his conquests, only two Totonac pueblos, Pantepec and "Jicotepec," on the northern and northwestern limits of the province. But others indicate that it was the younger Moctezuma who subjugated Papantla, as well as a whole series of Totonac pueblos, in a large block north of Jalapa, and farther west, in the Sierra de Puebla (map 18, Appendix B).

A few scattered Totonac settlements may have escaped the Mexican yoke—for example, Tuzamapan and Ayotoxco, near Jonotla (p. 279). But by and large, before the reign of Moctezuma terminated, virtually all of Totonacapan, both northern and southern, was under Mexican control.

NATURE OF THE CONQUEST

From early times, Totonacapan seems to have been a province wide open to invasion. Papantla claimed to have given battle to the forces of the younger Moctezuma, as did Chiltoyac (p. 279), and the establishment of Mexican garrisons in Totonacapan implies a certain amount of active opposition. Moreover, Ixtlilxochitl (2:332) speaks of frequent uprisings, particularly in Totonacapan, during the reign of the younger Moctezuma.

Nevertheless, on the whole, the sources give the impression that the Totonac were far from bellicose and that they met successive intrusions with little more than passive resistance. Except for the rebellions against Moctezuma II, we find only one reference to aggressive warfare on the part of the Totonac, and, unfortunately, the passage is obscure to us. It refers to Totonac and Huastec who, bearing a white standard, fought naked, in Zumpango, during the reign of the elder Moctezuma (Códice Chimalpopoca, p. 54).

It may be suspected that the relatively late impacts with the expanding Mexican Empire left little cultural imprint in Totonacapan. The conquest appears to have been essentially military and political, with predominant emphasis on the payment of tribute. There is no mention of colonization from the central highlands at that time; but, in contrast, the earlier intrusions of the Toltecs, the Olmeca-Zacateca, the Chichimecs and the Teochichimecs involved actual settlement either on the borders of Totonacapan or within the province (pp. 16–20). Moreover, in time of famine, the highland folk not only went to Totonacapan for maize, but entire families settled there; and the Totonac took advantage of the situation to acquire slaves from the Valley of Mexico (p. 7). This sort of infiltration involves more intimate contact and presumably has more lasting influence than does a nominal conquest. In other words, we suspect that highland influences found in Totonacapan antedate the Mexican conquest.

DISCOVERY

Although the Spanish discovery of Totonacapan is part and parcel of the discovery of New Spain, we shall confine ourselves to a sketch of events which bear directly on the Totonac area.

ANTECEDENTS

From the arrival of the Spaniards in the New World, the Antilles, and especially Santo Domingo, became the base for subsequent explorations. At that time—during the late fifteenth and early sixteenth centuries—the Spaniards still were more interested in a sea route to the Orient than they were in local conquest and colonization. Stimulated by the success of Portuguese navigators, who followed the route to the east, along the African coast, the Spaniards made frequent explorations to the west and south of the Antilles (cf. Pereyra). It is quite possible that these trips led to knowledge of the coast of the Gulf of Mexico prior to the expeditions of 1517, 1518, and 1519, headed respectively by Hernández de Córdoba, Grijalva, and Cortés, inasmuch as several earlier European maps (Juan de la Cosa, 1500; Stobnicza and Ptolemy, 1513) depict the Gulf coast with considerable precision, although far from completely.

Antón de Alaminos—erstwhile companion of Columbus and pilot for Hernández de Córdoba—is said (Díaz del Castillo 1:65) to have guided the latter by maps on his return from Yucatán to Cuba, via Florida. However, probably as a survival of the ideas of Columbus, Alaminos still believed that Yucatán was an island (Díaz del Castillo 1:63). It is evident that if he had maps of the Gulf, assuredly he did not use those mentioned previously—above all, that of Juan de la Cosa, since no break to the west is indicated along the coast (Pereyra 1:162,163).

In any case, it would appear that the Gulf coast was known prior to 1517. Among modern historians, both Pereyra (1:173, 174, 195–201) and Toussaint (p. 69) are inclined to credit the discovery to a voyage made between 1497 and 1498 by Americus Vespucci, Vicente Yáñez Pinzón, and Juan Díaz de Solís. Moreover, in agreement with Varnhagen and Fiske Toussaint (p. 70) believes that the voyagers landed in the Huasteca, because of certain ethnographic and ecological details contained in one of Vespucci's letters.

Subsequent to this hypothetical discovery, on his fourth and last voyage (1502), Columbus touched the coast of Nicaragua, without, however, penetrating the Gulf of Mexico. Later, in 1512, the survivors of a shipwreck reached Yucatán, where they were sacrificed by the Maya, with the sole exception of Gonzalo de Guerrero and Jerónimo de Aguilar. The latter, rescued in 1519, was promptly attached to the party of Cortés. Moreover, in 1515, the northern coasts of the Gulf were explored by Ponce de León.

In summary, it may be said that between 1497 and 1515, various voyages gave the Spaniards a more or less exact knowledge of the Gulf coast and even a certain amount of contact with the inhabitants. There is, however, no indication of any encounter, at such an early date, between the Spaniards and the Totonac. We may guess that the presence of Spanish ships in the Gulf and fleeting contacts with their occupants, may have given rise to feelings of uneasiness among the native peoples, which may have been translated into the revival of the myth of Quetzalcoatl and in the predictions of his imminent return.

HERNANDEZ DE CORDOBA AND GRIJALVA

About 1517 the situation became difficult for the majority of the Spanish residents in the recently conquered island of Cuba. Only a small part of them had obtained Indians and lands, and the dissatisfied ones decided to try their luck elsewhere (Díaz del Castillo 1:52). This was the origin of the expedition of Hernández de Córdoba, the real discoverer of Yucatán. Unhappy encounters with its natives moved the party to return to Cuba, having proceeded first to Florida. The course of the journey does not suggest, however, any possible contact with Totonacapan—nor even knowledge of its coasts.

The booty which the travelers brought back to Cuba, as well as the word of an abundance of precious metals, stimulated the Governor of Cuba, Diego Velázquez, to promote new explorations. A year later, in 1518, a new expedition set forth, under the leadership of Grijalva.

Grijalva's course was substantially the same as that of Hernández de Córdoba, but he continued from the point where the latter had left off, and reached the island of San Juan de Ulúa, opposite the shores of the present city of Veracruz. He remained 7 days in that spot, while "the Indians of nearby towns came to trade their gold and jewels" with the Spaniards' stores (Díaz del Castillo 1:87). At this point, the Spaniards were very close to Totonac terrain, and if the Totonac were not among the traders, at least, it seems likely that they were aware of the arrival of the strangers.

Grijalva continued his trip northward, along the coast, passing what apparently is modern Tuxpan, and reaching a large river which the party named Río Canoas.[47] At the mouth of this river, the Spaniards were attacked by natives in canoes before they continued north, to reach "a very large point, difficult to skirt and with many currents," for which reasons they did not proceed further (Díaz del Castillo 1:90).

The identification of the so-called Río Canoas and of the large point of land has aroused discussion. Toussaint (pp. 72–73) suggests that the river is the mouth of the lake of Tamiahua and that the point is Cabo Rojo. In any event, there is no doubt whatsoever that the expedition of Grijalva ran the full length of the coast of Totonacapan, from south to north, and, on the return journey, from north to south.

CORTES

The circumstances which made Hernán Cortés chief of the new expedition are well known. We shall not consider them, nor the incidents of travel as far as San Juan de Ulúa where, following Grijalva's example, Cortés established a base camp on the mainland. Nevertheless, the aims of Cortés were quite distinct from those of his predecessor. Far from being satisfied with barter, he did not conform to his instructions from Diego Velázquez and converted his expedition into an extraordinary enterprise of conquest.

The Spaniards had settled themselves in a zone which was in sharp dispute among the native peoples. Nevertheless, at that moment, Mexican supremacy was undisputed, and the strangers were received by representatives of Moctezuma the younger. Among them was the Governor of Cotaxtla, who was in charge of a group of tributary pueblos, some in the immediate vicinity of San Juan de Ulúa (Colección de Mendoza 5:84).

With this meeting, the long diplomatic struggle between Cortés and the envoys of Moctezuma began. The former insisted on proceeding to the court of the Mexican rulers; the latter tried to persuade him to remain on the coast. The situation became tense. Provisions, with which the Spaniards had been generously provided at first, were all but cut off; the natives no longer visited the camp; and an attack was feared. To crown the difficulties, the bay of San Juan de Ulúa proved inadequate for the fleet, and the camp site turned out to be unhealthful.

In a few dramatic pages, Díaz del Castillo (1:156–160) describes the situation and the discouragement which made the men eager to return to Cuba. During these trying circumstances, two incidents proved decisive for the Conquest: the discovery of the town of "Quiahuixtlan" and the arrival at the Spanish camp of a group of friendly messengers sent by the chief of the Totonac center of "Cempoala." This is the first actual contact between Spaniards and Totonac of which we have record and it is depicted graphically by Díaz del Castillo.[48]

With amicable relations established between the Totonac and the Spaniards, the difficult position of Cortés and his troops changed radically. A few days following the meeting, the party moved to "Cempoala" where, instead of being in hostile isolation, surrounded by Mexicans, the Spaniards now were among friendly people and could count on abundant food, good quarters, and healthful surroundings.

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[47] ". . . vimos las sierras que se dicen de Tuxtla, y, más adelante, de ahí a otros dos días, vimos otras sierras muy más altas, que ahora se llaman las sierras de Tuxpa . . . Y yendo nuestra derrota vimos muchas poblazones, y estarían la tierra adentro, al parecer, dos o tres leguas . . . llegamos a uno río grande y muy corriente, que le pusimos nombre río de Canoas . . ." (Díaz del Castillo 1:90).

[48] "Y un día, estando yo y otro soldado puestos por espías en unos arenales, vimos venir por la playa cinco indios, y por no hacer alboroto por poca cosa en el real los dejamos llegar a nosotros, y con alegres rostros nos hicieron reverencia a su usanza, y por señas nos dijeron que los llevásemos al real. Yo dije a mi compañero que se quedase en el puesto, y yo iría con ellos, que en aquella sazón no me pesaban los pies como ahora que soy viejo. Y desde que llegaron adonde Cortés estaba, le hicieron gran acato, y le dijeron *Lope luzio; lope luzio,* que quiere decir en lengua totonaque: "Señor, y gran señor." Y traían unos grandes agujeros en los bezos de abajo, y en ellos unas rodajas de piedras pintadillas de azul, y otros con unas hojas de oro delgadas, y en las orejas muy grandes agujeros, en ellas puestas otras rodajas con oro y piedras, y muy diferente traje y habla que traían que la de los mexicanos que solían estar con nosotros. Y como doña Marina y Aguilar, las lenguas, oyeron aquello de *Lope luze,* no lo entendían. Dijo la doña Marina en la lengua de México que si había allí entre ellos *nahuatlatos,* que son intérpretes de la lengua mexicana, y respondieron los dos de aquellos cinco que sí, que ellos la entendían, y dijeron que fuésemos bien venidos . . ." (Díaz del Castillo 1:160).

At the same time, the discovery of "Quiahuixtlan" by Montejo—sent with two of Cortés' pilots to explore the coast—resulted in the location of a good anchoring adjacent to Totonac territory, and the fleet was moved to this haven.

Once in new and more secure surroundings, the Spanish conqueror was able to formulate plans which on the sandy shores of San Juan de Ulúa had appeared impossible. In the course of his conversations with the Totonac, Cortés had come to realize the precariousness of the Mexican conquest, and he now felt that it was feasible to move inland to the court of Moctezuma. It is no exaggeration to claim that the attitude of the Totonac sealed the fate of the Mexican Empire and the destiny of Hernán Cortés as definitely as, later, Tlaxcalan loyalty to the Spaniards was to make possible ultimate victory following the disaster of the *Noche triste.*

CONQUEST

The Spanish conquest of Totonacapan is almost unique in that the Totonac were received into the Spanish empire as allies, that is, as subjects incorporated into the empire through the will of their own native leaders. This is particularly true with respect to southern Totonacapan; the northern coast and the highlands were taken over by the Spaniards following the defeat of Moctezuma and the surrender of Cuauhtemoc. But the use of military force against the Totonac, in all of Totonacapan, is recorded only for the pueblo of Almolonga (Paso y Troncoso 5:118), which rebelled during the siege of the Mexican capital. In short, the conquest of Totonacapan was singularly free from the violence and cruelty which characterized that of other parts of New Spain.

TOTONAC-MEXICAN HOSTILITY

It is not difficult to understand the reasons for the Totonac attitude, which so profoundly influenced the conquest of New Spain. Through a series of brutal wars with the Triple Alliance, the Totonac had lost their independence and had been subjected to heavy tax levies. Moreover, the arrival of the Spaniards had given rise to a series of Mexican campaigns in the course of which tribute had been augmented and cruelties carried to an extreme.[49]

Assuredly, the Totonac hoped, with Spanish aid, to challenge Mexican supremacy anew and to avoid the reprisals which had followed previous resistance. Candidly, they trusted the power of the Spaniards, which they claimed to know through the earlier skirmishes in Tabasco and "Potonchan" (Díaz del Castillo 1:161).

THE QUETZALCOATL MYTH

The influence of the promised return of Quetzalcoatl has been discussed frequently with relation to the Conquest, but chiefly with respect to the Mexicans and Moctezuma; its influence on coastal pueblos, particularly Totonac, scarcely has been considered.

Moctezuma and the Mexicans were convinced that the arrival of the Spaniards—be they Quetzalcoatl himself or simply his envoys—marked the end of the rule of Tenochtitlan. Accordingly, the myth of Quetzalcoatl was instrumental in paralyzing the initiative of the towns of the Valley of Mexico. But what was the Totonac reaction?

It is evident that the Totonac likewise regarded the Spaniards as supernatural, for once this belief weakened (ftn. 54, p. 29), their attitude toward the conquerors changed radically. In short, it may be said that the myth presumably aided the Spaniards in establishing friendship and alliance with the Totonac. Although the early sources do not make specific mention of the Quetzalcoatl myth among the Totonac, they report roughly equivalent ideas.[50] Moreover, in "Cempoala" has been found a clay statue, with various attributes of Quetzalcoatl (García Payón, 1949 a, pp. 12–15), and the same site has a temple dedicated to the god of wind, Ehecatl (García Payón, 1949 b, p. 452), who usually is identified with Quetzalcoatl.

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[49] ". . . se alteraron muchas provincias que querían negar la obediencia á Motecuhzoma por las demasiades imposiciones de tributos que cada día, les ponía, usando más de crueldad y tiranía que de piedad . . . y los que esto más frecuentaban fueron los de las provincias de Tonacapan que llegaban hasta las costas del mar del Norte, que parece que su Divina majestad iba disponiendo las cosas como veía que convenía para la entrada de su santa fe católica en este nuevo mundo" (Ixtlilxochitl 2 : 332–333).

[50] Tenian gran esperanza en ella, que por su intercesion les habia de enviar el Sol á su hijo, para librarlos de aquella dura servidumbre . . ." (Las Casas, p. 325).

"También se halló que en algunas provincias de esta Nueva España, como era en la Totonaca, esperaban la venida del Hijo del gran Dios (que era el sol) al mundo, y decían que había de venir para renovarlo y mejorarlo en todas las cosas" (Mendieta 3 : 200).

We may guess that the confusion of Quetzalcoatl with the Spaniards produced as much pleasure and satisfaction among the Totonac as it did despair and bitterness among the Mexicans. Undoubtedly, it favored Cortés' enterprise from the start, in that it disarmed his enemies of the plateau, at the same time that it won him allies in Totonacapan.

SPANISH-TOTONAC ALLIANCE

The route followed by Cortés' troops is not difficult to reconstruct along general lines, from the statements of Cortés himself and those of Díaz del Castillo. From the shores of the present Veracruz, they followed the coast northward, to the Río de la Antigua. This stream served, in part, as a boundary between the area dominated directly by the Mexicans and Totonacapan, which latter, although tributary to Moctezuma, preserved some measure of independence. Here, on the river, the Spaniards came upon "some pueblos subject to another great pueblo which is called Cempoal" (Díaz del Castillo 1: 168). Crossing the river, the army headed westward, until it met an envoy from the chieftain of "Cempoala," who led them to the city. After a brief stay, the Spaniards continued to "Quiahuixtlan," where they established their base.

This was the spot where the Spanish-Totonac alliance took form. Here, the principal men of "Cempoala" and "Quiahuixtlan" foregathered; Cortés listened to their long list of grievances against the Mexicans and promised aid. The arrival of the tax collectors of Moctezuma almost disrupted plans, for the Totonac leaders lost their recently instilled courage. Nevertheless, the seizure of the Mexicans increased Spanish prestige and allowed Cortés to instruct the Totonac to pay no further tribute and to disregard orders from Moctezuma. The realm of the Triple Alliance started to crumble. A large part of the rich and coveted coast, for whose possession Tenochtitlan, Texcoco, and Tacuba had fought since the middle of the preceding century, slid from their grasp without a single battle. The next step was to legalize the alliance by incorporating the Totonac into the Spanish Empire.[51]

Unfortunately, we do not know which pueblos of Totonacapan were included in the pact. Except for "Cempoala," "Quiahuixtlan," and Misantla, the participating towns remain anonymous, although it is said that "more than 30 pueblos of the sierras" were involved (Díaz del Castillo 1: 178); Cortés (Gayangos, p. 53) raised the number to 50.

It appears logical to conclude that the allied Totonac zone did not extend north of Nautla, where there was a strong Mexican garrison, or south of the domain of "Cempoala," that is, the Río de la Antigua. The *sierras* mentioned in the chronicles do not refer to the great cordillera along the borders of modern Veracruz and Puebla, inasmuch as Cortés (Gayangos, p. 53) speaks of the "sierra comarcana a la dicha Villa," which clearly indicates a point near "Cempoala." Presumably, then, the *sierras* were the mountainous zone which is found between the Río de la Antigua and the Río de Nautla and which runs more or less parallel to and about 40 km. inland from the Gulf shores. Since Misantla informants in the late sixteenth century stated explicitly that their leaders had gone to Veracruz Vieja, to render homage to Cortés (Relación de Misantla), it may be assumed that their pueblo was one of those of the *sierra*.

Word of the alliance spread widely,[52] and war broke out, as it had years before, in Cotaxtla, Tuxpan, and other pueblos (Appendix B), with a general massacre of Mexicans. But this time, vengeance was not forthcoming, and Moctezuma was indifferent to offenses which on other occasions had brought destruction upon the pueblos and slavery or death to its inhabitants.

The only military episode to take place before Cortés left for Tenochtitlan was that of "Zimpancingo" or "Cingapacinga" (Díaz del Castillo 1: 181). This pueblo presumably is to be identified with the "Tizapancingo" which appears on the Patiño map (Colección Orozco y Berra, No. 57). In any case, there was a Mexican garrison in "Zimpancingo" and the chieftain of "Cempoala," complaining that its troops had opened hostilities, requested the aid of Cortés (Díaz del Castillo 1:182). A force of Spaniards, accompanied by 2,000 warriors from "Cempoala," headed for "Zimpancingo," to find the Mexicans had abandoned the town. Basically, this appears to have been an intrigue on the part of "Cempoala," an old enemy of "Zimpancingo" (Díaz del Castillo 1:185), owing to boundary disputes (Solís, p. 73). Cortés did not allow those of "Zimpancingo" to suffer, and, moreover obligated the chieftains of the two towns to make their peace (Díaz del Castillo 1:187).

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[51] "Entonces prometieron todos aquellos pueblos y caciques a una que serían con nosotros en todo lo que les quisiésemos mandar, y juntarían sus poderes contra Montezuma y todos sus aliados. Y aquí dieron la obediencia a Su Majestad, por ante un Diego de Godoy, el escribano, y todo lo que pasó lo enviaron a decir a los más pueblos de aquella provincia" (Díaz del Castillo 1: 178).

[52] ". . . corrio por toda aquella Costa, y Serranía, se rebelaron muchos Lugares, y Señores, y toda aquella Tierra: No dexaron Recaudador ninguno de Mexico, y publicaron Guerra abierta contra Motecuhçuma . . . (Torquemada 1: 403).

TOTONACAPAN AT THE TIME OF CORTES' MARCH

More or less contemporaneous with the above were other events which need not be mentioned in detail: for example, the establishment of the first *ayuntamiento* in New Spain; the founding of the first Veracruz, opposite San Juan de Ulúa, and, subsequently, that of the new Veracruz, on the shores of the Río de la Antigua; the conspiracy of the partisans of Diego Velázquez, severely crushed by Cortés; and the sinking of the fleet, except for a vessel which carried emissaries to Spain. Of these, perhaps the most important was the founding of the new Veracruz, built with Totonac aid, and fortified to accommodate a small Spanish garrison.

At this time, Totonacapan was at peace. A firm alliance with a goodly number of its pueblos had been arranged and, temporarily, Mexican resistance was paralyzed. A Spanish garrison had been established in Veracruz, and the army had been reinforced with sailors from the sunken fleet. Under these propitious circumstances, Cortés began preparations for his march to Tenochtitlan.

Before he left, an incident took place which, on the one hand, jeopardized Spanish-Totonac relationships and, on the other, reinforced them. The chief of "Cempoala" previously had told Cortés of his eagerness to cement friendship through marriage of Spaniards with Totonac women. Cortés, desirous of inducing the Totonac to abandon old beliefs and practices, refused the women; and, at his orders, the Spaniards began to destroy the native idols, in the face of great Totonac indignation. The chief of "Cempoala" intervened and an armed clash was averted. As the final outcome, the Spaniards received eight women; and the native temple, cleaned and whitewashed, was converted into a Christian chapel.

Before setting out, Cortés appointed Juan de Escalante head of the small garrison to be left behind and, as a gesture of acceptance, the Totonac censed him with copal incense (Díaz del Castillo 1:207; Torquemada 1:411).

THE TOTONAC IN CORTES' ARMY

Although the Totonac attitude toward the Spaniards may be considered decisive for the outcome of the Conquest of New Spain, the same cannot be said of Totonac military participation. The number of warriors was not small, yet their action was limited and by no means outstanding.

There is no agreement concerning the number of Totonac who accompanied Cortés. The latter himself (Gayangos, p. 53) speaks of 50 towns and fortresses and of 50,000 warriors. Torquemada (1:402) raises the number to 100,000, as do Solís (p. 69) and Herrera (4:404); Oviedo (3:261) follows Cortés' estimate.

In any case, the matter is of little importance, since the entire group was not mobilized. Only 2,000 "Cempoaltecan" warriors participated against "Zimpancingo," and a small group accompanied Cortés to Tenochtitlan, less for military reasons than for the security of the Spaniards who remained behind, in Totonac territory (Gayangos, p. 53). Díaz del Castillo (1:213) writes of "forty principals, all men of war" and says that, in addition, "they gave us two hundred *tamemes* [porters] to carry the artillery." Solís (p. 79) agrees in the number of porters and of principal men, but adds that the latter were complemented by sufficient warriors to bring the total to 400. Cortés (Gayangos, p. 62) himself places the number at 400. Oviedo (3:268) gives the same total, but adds 300 warriors from Ixtacamaxtitlán which, by his own account, was not Totonac but Mexicano (Oviedo 3:260).

With the exception of Sahagún (4:45, 46, 60), sixteenth-century sources are silent concerning Totonac military participation. Nevertheless, a later account (Solís) extols the bravery of the Totonac. It was a warrior of "Cempoala" who notified Cortés of the presence of Tlaxcalan spies in the encampment (Solís, p. 98); and in Cholula, the "Cempoaltecas" discovered the famous ambush (Solís, p. 121). Moreover, the Totonac served as advance guard for the cavalry, so that "the horses might not be endangered" (Solís, p. 124). As a matter of fact, one gains the impression that Cortés trusted the Totonac (Gayangos, p. 60) more than his recently acquired allies, the Tlaxcalans, for when the Spaniards retired to their quarters, they were accompanied only by "Cempoaltecas" (Solís, p. 125). Just before entering the Mexican capital, a number of Totonac requested permission to return to their homes, and Cortés assented. However, both Totonac and Tlaxcalans were in the ranks when the army entered Tenochtitlan (Sahagún 4: 60; Solís, p. 133).

TOTONACAPAN AFTER THE MARCH OF CORTES

While Cortés and his army were proceeding toward Tenochtitlan, Escalante, and the small force which had been left behind, faced a difficult situation. The Mexican garrison in Nautla[53] began to overrun the country, and the Totonac leaders complained to Escalante, reminding him of promised aid. The Spaniards were scarcely in condition to be helpful because, apart from their limited numbers, most of them were either ill or aged. Regardless, assistance was indicated, to avoid losing prestige and to avoid having later to face not only Mexican but Totonac ire.

Escalante attempted to resolve the problem diplomatically, by sending "Cempoalteca" envoys to Cuauhpopoca, the Mexican leader in Nautla. The response was bold and discourteous (Solís, p. 163). Accordingly, the Spanish captain mustered some 40 of his most fit soldiers, and with 2,000 Totonac troops (Díaz del Castillo 1: 344)—or, 6,000 (Epistolario 1: 76), according to one of the participants—he sallied forth against the Mexicans. The encounter took place on the plains of "Almería" (Nautla), and the result was indecisive. Scarcely had the battle started when the Totonac deserted the field. Nevertheless, Escalante managed to enter Nautla and to burn the houses. Although the Mexicans officially were vanquished, seven Spaniards were killed, among them Escalante, and another was captured alive and his head sent as a trophy to Moctezuma.

In spite of the fact that the battle was generally presented as a Spanish victory, letters which reached Mexico from Veracruz depicted a desperate situation.[54] Cortés acted rapidly and effectively, by forcing the imprisoned Moctezuma to have Cuauhpopoca tortured. Totonacapan again was reduced to obedience. Cortés sent Alonso de Grado to take charge of the garrison, replacing him almost at once by Gonzalo de Sandoval, who completed the subjugation of the area. While Cortés, keeping Moctezuma prisoner, was sending explorers to different parts of the Mexican realm, we may imagine that Veracruz garrison was not inactive, especially when in charge of a leader with the qualities of Gonzalo de Sandoval. But there is no record, at that time, of further campaigns in Totonacapan.

NARVAEZ, AND THE RETURN OF CORTES

As a matter of fact, Gonzalo de Sandoval had little time at his disposal before the appearance of the fleet sent by Diego Velázquez, with troops under the command of Pánfilo de Narváez. The infuriated Governor of Cuba was eager, at all costs, to subdue Cortés.

The forces of Narváez camped in "Cempoala," and lost no time in arousing the hatred of the Totonac. The chief of "Cempoala" had received the group with joy, believing that reinforcements had come for Cortés and expecting, moreover, the treatment warranted by virtue of the Totonac position as allies and Spanish subjects. But his disillusionment was rapid and complete. Not only did Narváez incite Moctezuma against Cortés, but he exploited and mistreated the Totonac. He personally despoiled the "Cempoalteca" chief of his treasures and obliged him to surrender Spanish property left in his custody. The subordinates of Narváez followed the example set by their leader.

The activities of Narváez not only encouraged the Mexicans to rise against Cortés, but they likewise threatened to provoke a Totonac revolt. The day was saved in Totonacapan by the rapid march of Cortés from Tenochtitlan to "Cempoala" and by his brilliant defeat of Narváez; not so in the Mexican capital where, provoked by Pedro de Alvarado, a general uprising took place.

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[53] Díaz del Castillo (1: 343) places it "a la raya de Pánuco, entre Tuzapán y un pueblo que le pusimos por nombre Almería"—that is, Nautla.

[54] ". . . que todos los pueblos de la sierra y Cempoal y su sujeto están alterados y no les quieren dar comida ni servir en la fortaleza, y que no saben qué se hacer, y que como de antes los tenían por *teules*, que ahora que han visto aquel desbarate les hacen fieros, así los totonaques como los mexicanos, y que no les tienen en nada ni saben qué remedio tomar . . ." (Díaz del Castillo 1: 342).

Skillfully, Cortés reestablished cordial relations with the Totonac, and upon his return to Tenochtitlan, he was accompanied by "many Indians of Zempoala and Tlaxcala, all armed for war with great haste" (Sahagún 4: 67).

TOTONACAPAN DURING THE SIEGE OF TENOCHTITLAN

About this time, mention of Totonacapan fades from the early chronicles, which are absorbed by the main drama of the siege and surrender of the Mexican capital.

It is, however, logical to suppose that peaceful penetration was extended progressively throughout Totonacapan. The implication is that the northern zone was beginning to come under Spanish control. Since 1520, Cortés had planned an expedition to the Huasteca, with a view to locating a port more adequate than those of San Juan de Ulúa and "Quiahuixtlan." For various reasons, he was not able to undertake this move until 1522. But the Huasteca lies directly north of Totonacapan, and we may assume he counted on controlling the latter province before establishing himself in the area to the north. In fact, it would appear that Papantla actually passed into Spanish hands before the fall of Tenochtitlan.[55]

About the time the Mexican capital was under siege, there were important uprisings in Jalacingo, on the borders of Totonacapan (Díaz del Castillo 2: 119–120; Gayangos, p. 163; Oviedo 3: 344), and in Huatusco (Gayangos, p. 260; Ixtlilxochitl 1: 383; Oviedo 3: 426), some distance to the south. Both were suppressed by Sandoval. However, there is no indication that these agitations had strong reverberations in Totonacapan. Misantla, at least, continued under Spanish rule (Relación de Misantla), although it would appear that Almolonga rebelled, with disastrous results.[56]

For western Totonacapan—the highlands along the modern Veracruz-Puebla border—we have old *relaciones* from "Matlatlan" and Chila, Zacatlán, Hueytlalpan, and Jojupango. Without offering resistance, the first two were conquered by Francisco de Montejo, about 1520 or 1521 (Relación de "Matlatlan" y Chila). *Relaciones* for the other pueblos indicate that Hueytlalpan submitted peacefully to Pedro Cintos de Portillo and Juan de Salazar;[57] Jojupango, to Gonzalo Portero; and Zacatlán, in 1520, to Hernán López.

In conclusion, it would appear that between 1519 and 1522 the Spanish conquest of Totonacapan was more or less completed—with the exception of certain isolated pueblos, difficult of access.

EVANGELIZATION

Conquest was followed by evangelization—or, as Ricard (1933) calls it, "spiritual conquest." Missionizing endeavors in Totonacapan began early and endured late. Two religious orders were involved, but, on the whole, their labors appear not to have been very intensive. In any case, the results were by no means in accord with the prolonged proselytizing to which Totonacapan was subjected, and there are evident survivals, even today, of old religious beliefs and practices.

THE FIRST MISSIONARIES

Proselytizing began at the same time as the military conquest. Obviously, the initial procedures were very distinct from those which the Franciscans followed later. We may recall the destruction of the idols in "Cempoala"; the brusque discourses of Cortés; and the conversion, by force, of idolatrous temples into Christian chapels. There is no doubt that the conquerors, and especially Cortés, felt deeply the missionary aspect of their enterprise. Not infrequently, Cortés was on the verge of ruining his own plans—once, as we have seen, in "Cempoala"—through the spirit of religious crusade.

The first Christian chapel in New Spain was established in a *teocalli* in "Cempoala," after the destruction of the native idols, which were supplanted by crosses and an image of the Virgin. The temple was carefully cleaned and whitewashed, and a soldier, one Juan de Torres, elderly and lame, was placed in charge. He was aided by various Totonac functionaries, who were obliged to change their clothing and to cut their hair. This perhaps may be taken as a symbol of early evangelical procedure in New Spain.

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[55] ". . . quando vino el marques del valle tuvieron nueba de su venida estos dichos yndios y como vieron que monteçuma se avia subjetado aunque ellos no estaua á el, se subjetaron al dho. marques . . ." (Relación de Papantla).

[56] "Ay . . . hasta veinte indios tributarios; en tiempo de su gentilidad auia mas de myll y quinientos: consumyeronse como esta dicho y tambien porque despues de conquistados se reuelaron y en la reduçion fueron destruydos" (Paso y Troncoso 5: 118).

[57] ". . . los dichos yndios se les dieron por la noticia que tuvieron que se auia dado monteçuma en mexico . . ." (Relación de Hueytlalpan).

Following these first steps, real missionary labor began with the arrival of the Franciscans, in 1523. Although they did not scorn high-handed procedures and even force, they relied more on the effects of preaching and conversion. The first figure of this new era in Totonacapan was Fray Andrés de Olmos.

According to Mendieta (4: 95, 96), Padre Olmos proceeded from Mexico to Hueytlalpan, and to "the sierras of Tuzapan, where he was several days and converted and baptized all that people, and learned and knew very well the Totonac language." Among his labors is mentioned the construction of a hospital in Hueytlalpan (Epistolario 14: 77). Apparently he also was active in Cuautenco (Paso y Troncoso 5:153), a pueblo subject to Tetela; in fact, he is credited with renaming it San Esteban.

Manifestly, the importance of the work of Fray Andrés de Olmos and his knowledge of the Totonac language indicate a much more prolonged stay in Totonacapan than that reported by Mendieta. We may assume that his labors in that area began prior to 1530, in which year he founded the first mission in the Huasteca (M. Cuevas, 1942, 3:409–410), for Mendieta (4: 96) states flatly that Olmos proceeded from "Tuzapan" to the Huasteca.

However, he evidently returned later to Totonacapan, for there are two documents (Olmos) signed by him in 1540, in the pueblos of Hueytlalpan and "Matlatlan" respectively. Both concern the heresies of a Totonac chief in "Matlatlan"; one is a letter from Olmos to Bishop Zumárraga; the other presents evidence concerning interrogation of witnesses. Moreover, a document dated 1578, in Hueytlalpan (AGN, No. 2), states that Olmos was in charge of the mission in that pueblo 46 years before, or in 1532.

Olmos' work in Totonacapan was continued by Pedro Cintos—an old soldier of Cortés and conqueror of Hueytlalpan, and *encomendero* of that town and of non-Totonac Tlatlauquitepec. There "he worked to enrich himself at the cost of sweat and blood of the Indians he held in *encomienda*" (Mendieta 4:127). But he suffered a change of heart, "when most absorbed in greed for temporal things," and dedicated himself thereafter to the propagation of the faith (Mendieta 4:128).

A third, and more tenuous, figure evidently was roughly contemporaneous with Olmos and Cintos. This is Fray Francisco Toral, who reached Mexico with Olmos and the famous first group of 12 Franciscans. Nothing is known of his activities in Totonacapan; in fact, the assumption that he proselytized there is based exclusively on a lost work [58] attributed to him. It is said to have been written some time between 1524 and 1572 (Ricard, p. 345), a span so broad that it gives little clue to dating. Between 1557 and 1560, Toral was head of the Franciscan province of the Santo Evangelio (Ricard, ftn. 7, p. 84), and it is possible that his Totonac contacts dated from this period. Presumably, they were prior to 1561, when he was named Bishop of Yucatán and Cozumel (M. Cuevas, 1942, 1:303).

In summary, there were two principal early figures in the missionary labor among the Totonac, Fray Andrés de Olmos, and the ex-soldier, Pedro Cintos; both appear to have concentrated their efforts in the northern part of the present State of Puebla. A third figure, Fray Francisco Toral, remains dim, but apparently must be considered a contemporary of Olmos and Cintos.

ORGANIZATION OF THE EVANGELIZATION

Naturally, missionary progress was more marked in Totonacapan once the Franciscan order began to radiate influence from its principal seat in Tlaxcala, which had jurisdiction over Totonac missions in the sierra and in southern Totonacapan.[59]

The arrival, in 1533, of members of the Augustinian order gave new impetus to the missionary labor among the Totonac. They were active in the northern highlands and established a center in Huauchinango, whose convent dates from 1543 (Ricard, p. 94). Another important Augustinian base was in Pahuatlán (Epistolario 14:78), from which center nearby Totonac pueblos were ministered (Doctrinas, p. 281). With respect to Totonacapan, Augustinian efforts were concentrated along the borders of the present States of Puebla, Hidalgo, and Veracruz.

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[58] *Arte, vocabulario, doctrina cristiana y sermones en lengua totonaca* (Ricard, p. 348).

[59] ". . . a Tlaxcala acudía Zacatlan, y todas las serranías que hay por aquella parte hasta la mar, y lo de Xalapa también hasta la mar, y lo que cae hacia el río de Alvarado . . ." (Mendieta 2:94).

In part, this is confirmed by the Relación de Zacatlán: ". . . ques obispado de tlascala tienen á cargo y administracion este pueblo y sus subjetos tres frayles franciscos que administran la dotrina en esta dicha cabesçera del dicho obispado."

The Dominicans, who reached Mexico in 1526, and the Jesuits, toward the end of the century, were not active in Totonacapan, where proselytizing remained in the hands of the Franciscans and Augustinians.

The evangelical work of the religious orders was supplemented by that of the secular clergy, and all of Totonacapan fell within the bishopric of Tlaxcala. The conflicts between the two main bodies of religious workers during this epoch are well known and undoubtedly retarded appreciably the conversion of the natives (Ricard, pp. 293–301).

Between 1567 and 1571, the secular clergy replaced the religious orders in most of Totonacapan which lies within the present State of Veracruz.[60] A few Franciscans remained in Jalapa (Códice franciscano, p. 27), to minister likewise in the pueblo of Chiltoyac (Paso y Troncoso 5:119), but their main concern was a hospital for Spaniards and Indians (Paso y Troncoso 5:105). Elsewhere, administration was in the hands of the clergy (map 4). Each priest tended the spiritual needs of a group of Totonac, scattered in the surrounding area, sometimes at a considerable distance. About this time, Papantla had no resident priest and was visited at first by the *vicario* of Chicontepec (Doctrinas, pp. 220–221). But the latter complained so bitterly of the hardships involved, that the duties eventually were passed to the priest of Chichilintla (Epistolario 14:77; Relación de Papantla). Nevertheless, by 1610, Papantla had its own priest (Mota y Escobar, p. 232).

Within the limits of the modern State of Puebla, religious orders continued to be highly active in Totonacapan, operating from the Augustinian bases in Pahuatlán and Huauchinango (Doctrinas, p. 280; Ricard, p. 94) and the Franciscan center in Zacatlán (Códice franciscano, p. 26; Epistolario 14:73; Ponce 1:208). However, resident priests were found in parts of the area (map 4). Although Chicontepec lies outside the limits both of Totonacapan and of the State of Puebla, its priest must be mentioned here, since he served the northernmost Totonac settlements—Ameluca, Huitzila, Jalpan, "Tuzapan," Papantla, and "Caxitlantongo" (Epistolario 14:74; Doctrinas, pp. 219–220), most of which were in modern Puebla.

RESULTS OF EVANGELIZATION

In spite of the fact that Totonacapan was the first province to have considerable contact with Spanish culture, and in spite of early missionary activities in that area, the results were less apparent than in many other parts of New Spain.[61]

This relative failure may have resulted in large part from demographic conditions. During the colonial era, the large Totonac centers of the coast declined in importance; through disease and as a corollary of the colonial system, their native populations were all but exterminated, and the survivors apparently took refuge in rugged areas difficult of access. Efforts to concentrate the scattered population of Totonacapan were, for the most part, unsuccessful, and the disperse character of the settlement probably added materially to the difficulties of missionizing.

There are concrete indications of a decrease in population combined with diminishing intensity of evangelical labors. Although, at the time of the Conquest, Papantla reputedly was a sizable pueblo, in 1581, it had only the services of a visiting curate and vicar from Chichilintla (Relación de Papantla). Moreover, by 1579, Misantla had been abandoned by the missionaries of Jalapa, and the Bishop of Tlaxcala provided a cleric (Relación de Misantla). Later, in the course of several visits of Mota y Escobar, between 1608 and 1624, only 26 Totonac pueblos are mentioned, many innocent of resident missionaries and visited from time to time by clerics of neighboring towns.

The scarcity of religious works translated into Totonac and the small number of religious workers equipped to minister in that language may be suggestive, but probably are not significant, because of the general use of Mexicano. However, much later, the church fixed attention sporadically on Totonacapan, and religious documents, translated into the Totonac language, appeared: Pantaleón, Bonilla, F. Domínguez, and J. M. Domínguez, in the middle eighteenth century; and, in relatively recent times, P. Cuevas and Corona.

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[60] The Franciscans had been active in Misantla, in 1557 (AGN, No. 1), where they founded a church; but by 1579, they had abandoned the pueblo (Relación de Misantla).

[61] In 1933, Ricard (p. 330) notes the "survivance du paganisme à côté et en dehors du catholicisme, valable pour les Popoloques, les Totonaques . . ."

The weakness of colonial religious architecture in most of Totonacapan is another indication of the slight attention devoted to its evangelization, once the epoch of Fray Andrés de Olmos was past. Religious structures, monastic and secular alike, built during the colonial epoch, are both scarce and exceedingly modest.

COLONIZATION

Once the conquest of Totonacapan was completed, attention turned to the problems of organization and exploitation. In this connection, it is essential to recall the apprenticeship which the Spaniards had served in the Iberian Peninsula, in the course of seven centuries of war with and reconquest of the Moors. In essence, the colonial system in Totonacapan followed the patterns developed and applied earlier in Spain, with the modifications necessitated by new surroundings.

Briefly, this pattern of colonization retained the social, political, and economic structure of the conquered pueblos, but involved replacement of rulers. The Spaniards supplanted the Triple Alliance and erected a new superstructure which, in time, overwhelmed the primitive native organization and gradually destroyed it.

The history of the colonization of Totonacapan may be subsumed as follows: the initial system of *repartimiento* and *encomienda;* the appearance and ultimate dominance of the *hacienda;* and the *reducción* and the Indian *congregación.* These will be considered briefly in the discussion to follow.

NATIVE ORGANIZATION

In Totonacapan the Spaniards found a native organization which Cortés attempted to retain without major change, believing that it might be adapted easily to his own ends.

The early chronicles indicate that Totonac society was stratified. The upper social group was formed by the *caciques* or *señores*, from whose families the religious, possibly also the military, leaders were recruited. The lower group, which comprised the bulk of the population was composed of warriors, agriculturalists, and slaves. It is logical to suppose that in the large centers there were important groups of artisans, perhaps also of merchants, but we know nothing of their social position.

The military conquest, followed by the evangelization and colonization, sped the disappearance of the native priests. Even so, there are indications (Olmos; Torquemada 3:203–205) that in some places the latter continued to function secretly and still had undoubted influence over the native peoples. Likewise, it seems probable that the system of *encomiendas* and *reducciones*, combined with Spanish control of all important commerce, led to the disappearance of the native merchants and artisans, if such groups existed. Native military organization also was eliminated by the Spaniards as soon as the need for auxiliary forces no longer was imperative—perhaps soon after the fall of Tenochtitlan.

In short, while the Spaniards maintained the two principal native social divisions, the latter were simplified through the suppression of priests, probably of merchants and artisans, and of warriors. The remaining members of the upper stratum, the ancient chieftains or *caciques*, were utilized by the Spaniards as intermediaries with the rest of the population. They were, of course, controlled intermediaries, who were replaced, in case of rebellion or marked disobedience, by other native authorities.

The prewhite political organization as a whole was retained by the Spaniards. In ancient times, an important center, such as Hueytlalpan, had a cluster of small settlements subject to it; to the political center of this nucleus, the Spaniards applied the term of *cabecera.* The system of land ownership likewise appears to have suffered no great alterations. Arable lands, woods, and water supply continued, on the whole, to be communal property (AGN, Nos. 1, 2, 3, 4, 10, 17), except in cases where they belonged directly to the native chiefs. The lower class continued to till the land for their *caciques*, for their own benefit, and for the payment of tribute. As the system of *encomiendas* and church organization developed, some Indians were obliged to render more labor than previously to their new Spanish overlords, both lay and ecclesiastical.

Despite these changes in the ancient Totonac social structure, the most direct factors which led to ruin lay in the superstructure built by the Spaniards during the colonial period.

REPARTIMIENTOS [62] AND ENCOMIENDAS

It has been said above that Cortés attempted to maintain native organization, insofar as it could be adapted to his ends as conqueror and colonizer. In part, he was successful; but, fundamentally, he failed.

A man of undoubted talent, Cortés hesitated to apply to New Spain the system of *repartimientos* which in Cuba and Española had caused rapid decimation of the native population. Essentially, the *repartimiento* consisted in imposing on the conquered peoples tasks of forced labor—in the fields, in the mines, in the construction of buildings and roads, and so on. Sometimes, these projects were for the benefit of the Crown, sometimes for the church, and sometimes for private individuals. They were considered particularly

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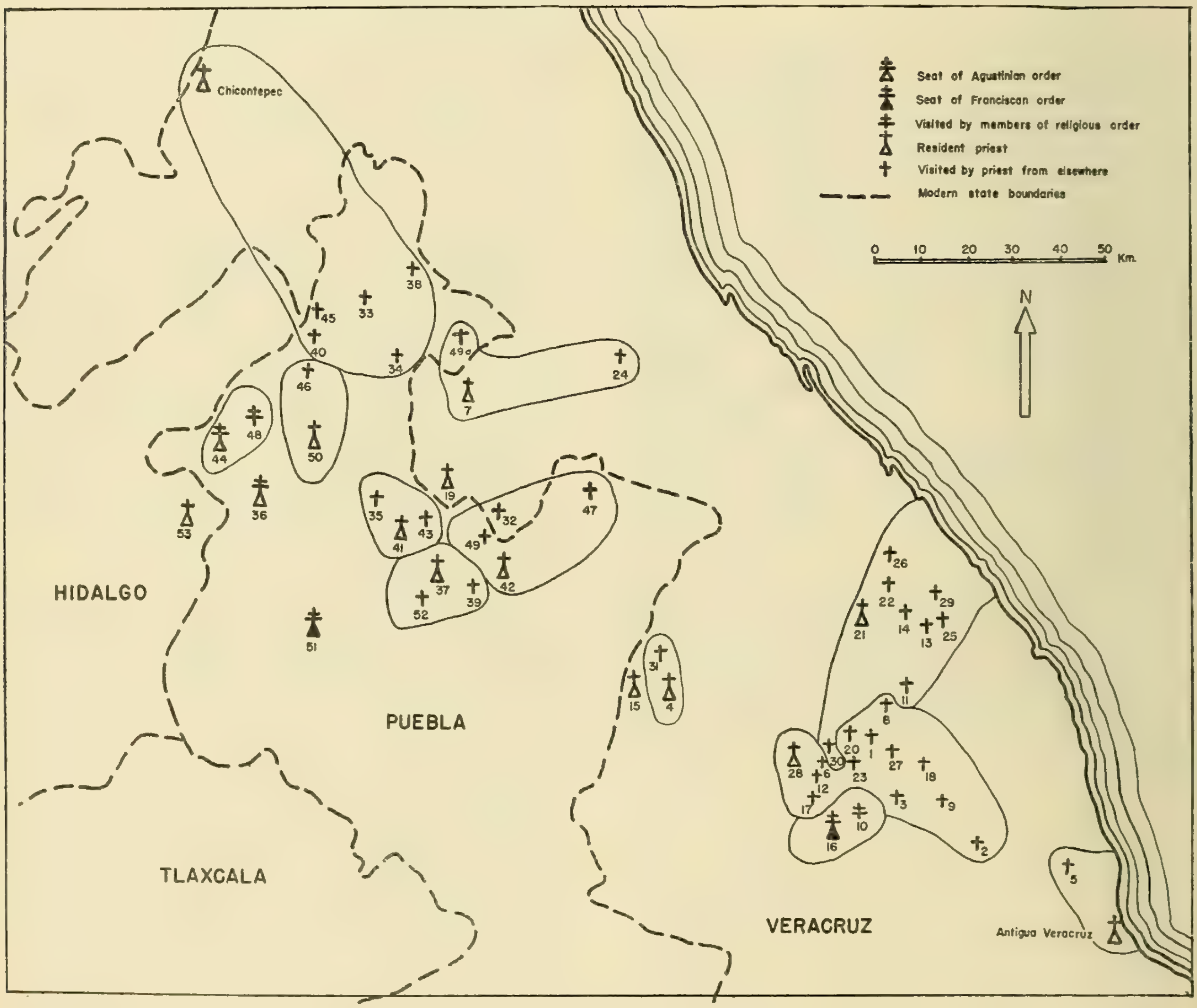
[62] An excellent study of the *repartimientos* has been published by L. B. Simpson, 1938.



MAP 4.—Ecclesiastical organization in Totonacapan, ca. 1569–71.

In only one case (pueblo No. 10), the information applies to a later date, namely 1580.

A partial key appears on the sketch. Pueblos which were administered from the same center are enclosed within a light bounding line. Totonac settlements are entered by number. Two pueblos—Chicontepec and Antigua Veracruz—are indicated by name alone; they lie outside Totonacapan, but Totonac pueblos fell within their jurisdiction.

Legend to map 4—Continued

Below, pueblos are listed according to present state affiliation, with numbers corresponding to those of the map. Source material is indicated in three columns. The first refers to *Doctrinas de indios a cargo de clérigos* and to *Doctrinas de indios a cargo de agustinos.* Both are cited as Doctrinas, and the page indicates which document is involved. The second column refers to the *Relación del distrito y pueblos del obispado de Tlaxcala*, published in the Epistolario, and so cited. The third column includes miscellaneous material.

No.	Pueblo	Sources		
		Doctrinas	Epistolario	Others
	VERACRUZ			
1	Acatlán	242	14: 81	
2	Actopan	241	14: 81	
3	Almolonga	242	14: 82	
	Antigua Veracruz			Paso y Troncoso 5: 193.
4	Atzalan	264	14: 80	
5	"Cempoala"		14: 82	Paso y Troncoso 5: 193.
6	Chapultepec	240	14: 81	
7	Chichilintla		14: 77	
8	Chiconquiaco	242	14: 81–82	
	Chicontepec	219	14: 75	
9	Chicuasén	241	14: 81	
10	Chiltoyac			Paso y Troncoso 5: 119.
11	"Ciguacoatlan"	204		
12	Coacoatzintla	242	14: 81	
13	Colipa	204		
14	"Huehuetepec"	204		
15	Jalacingo	247	14: 79–80	
16	Jalapa			Códice franciscano p. 27.
17	Jilotepec	240	14: 81	
18	Maxtlatlán	241		
19	Mecatlán	232		
20	Miahuatlán	242	14: 81–82	
21	Misantla	204	14: 80	
22	"Nanacatlan"	204		
23	Naolinco	240	14: 81	
24	Papantla	221	14: 77	
25	"Piloya"	204		
26	Potingo	204		
27	Tepetlán	241	14: 81	
28	Tlacolulan	239	14: 80	
29	"Tlapostectlan"	204		
30	Tonayán	204		
31	"Yohualtlacualoyan"	264		
32	Zozocolco	210	14: 76–77	
	PUEBLA			
33	Ameluca	219	14: 74	
34	"Caxitlantongo"		14: 74	
35	Chila	218	14: 78	
36	Huauchinango			Ricard, p. 94.
37	Hueytlalpan	213	14: 77	
38	Huitzila	219	14: 74	
39	Ixtepec	214	14: 77	
40	Jalpan	220	14: 74	
41	Jojupango	218	14: 78	
42	Jonotla	210	14: 76	
43	"Matlatlan"	218	14: 78	
44	Pahuatlán	280		
45	Pantepec	219	14: 74	
46	Pápalo	223	14: 73	
47	Tenampulco		14: 76–77	
48	Tlacuilotepec	282		
49	"Tonatico"		14: 76–77	
49*a*	"Tuzapan"	221	14: 77	
50	Villa Juárez	222	14: 73	
51	Zacatlán		14: 73	Códice franciscano, p. 26.
52	Zongozotla	214		
	HIDALGO			
53	Acaxochitlán	270	14: 73	

useful, as a means of recompensing conquerors for their services to the state.

In one of his letters to the king, Cortés (Lorenzana, p. 37) expressly asked that no *repartimientos* be made in New Spain, proposing instead that the conquerors be paid with a share of the tribute received by the Crown. However, impelled by local circumstances, and under pressure from his men, on his own initiative, Cortés began *repartimientos*.[63]

Thus started, *repartimientos* of Indians flourished, especially in the form of *encomiendas* granted to the conquerors. In spite of the fact that instructions were issued in Valladolid, in 1523, expressly prohibiting new *repartimientos* and annulling those already in existence, the orders had little effect in New Spain (Gayangos, pp. 328–330). Later, the Crown approached the matter more realistically and attempted to recover what had been given in *encomienda* to individuals. Regardless, during the sixteenth century and the early part of the seventeenth, a large area of Totonacapan was in hands of *encomenderos*, as the recipients of such grants were called. In table 14 (Appendix B) are found listed *encomenderos* of pueblos which, during the sixteenth century, were stated expressly to be Totonac.

As is well known, the *encomienda* consisted in assigning to a Spaniard a group of Indians, who were obliged to give certain services—for example, the cultivation of land, care of cattle, work in mines and sugar factories, construction of roads, and the like. For these labors, the Indians were to be paid or a corresponding amount was to be deducted from their tribute. In addition, the natives were expected to maintain the *encomendero* and his household, through personal service and payment of tribute. In exchange, the *encomendero* was obligated to protect the Indians, foster good habits, and provide religious instruction.

From the Spanish point of view, the *encomienda* was a precarious system, by reason of its temporal character. Legally, it was supposed to terminate with the death of the first grantee, following which the Indians passed under direct control of the Crown. Although the constant petitions of the *encomenderos* gained them the right to pass the grant to their children or direct heirs, and later to their grandchildren and more remote heirs, and although even in 1704, a new extension was granted, the *encomienda* system gradually lost its importance and was supplanted by other institutions.[64] Nevertheless, the *encomienda* endured a sufficient time to be a main factor in the destruction of the ancient social organization and other basic aspects of Totonac culture.

It has been noted above that the *encomienda* was a Spanish institution transplanted to the New World, where it acquired certain new characters—principally, an emphasis on religious instruction and acculturation. Although in Spain, a system had been created to defend the rights of the peasants, it did not extend to Totonacapan, where the Indians were directly subject to the whims of the *encomendero*. The only restraints on the latter were provided by occasional intervention of a Crown representative and by pressure from members of the religious orders. Accordingly, abuses and exploitation were standard practices, despite the substantial body of legislation designed to protect the Indians.

The native population was crushed, quite literally. Apart from supporting the native chiefs and paying to the Crown tribute which previously had gone to the Triple Alliance, the Indians were obliged to work for the Spanish *encomenderos* and for the church. It is not difficult to understand why the Totonac chose to abandon their homes and to retire to zones out of reach of Spanish authority.[65]

Socially, the *encomienda* was a new and weighty superstructure added to the burdens with which the native population already was afflicted.

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[63] His own statement follows: ". . . fueme casi forzado depositar los señores y naturales de estas partes a los españoles, considerando en ello las personas y los servicios que en estas partes a vuestra majestad han hecho, para que en tanto que otra cost mande proveer, o confirmar esto, los dichos señores y naturales sirvan, y den a cada español, a quien estuvieren depositados, lo que hubiesen menester para su sustentacion" (Cortés, Lorenzana, p. 37; Gayangos, p. 328).

[64] ". . . el ciclo histórico de esta institución . . . quedó cerrado definitivamente, de derecho y de hecho, en la segunda mitad del siglo XVIII" (Ots Capdequí, p. 39).

[65] Of Pahuatlán, it is said: ". . . pidieron los dichos indios quel tributo en que fueron tasados no lo podían complir ni pagar porque al tiempo que se hizo la dicha tasación había en el dicho pueblo gran cantidad de gente y después acá por los ecesivos tributos había venido en gran diminución" (Epistolario 8: 14, 15).

In 1593, special provision was made to prevent the exodus of Indians from Atzalan (AGN, No. 12); and death and flight of native population are reported specifically for Chumatlán, Papantla, "Tuzapan," Tihuatlán, and Jalpan (Mota y Escobar, p. 232; Doctrinas, p. 220).

Similar situation evidently applied in Crown pueblos as well. Pantepec ". . . esta mui acauado por hauerse muerto y huido muchos yndios" (Mota y Escobar, p. 242).

Legally, however, it did not change preexisting forms of property, and the Crown stipulated that no property, either private or communal, was to be taken from the Indians.[66] It is doubtful that the royal wish was followed in the majority of cases. Nevertheless, it is necessary to recall that private and communal property of indigenous groups has existed in Mexico until modern times.

As the *encomiendas* disappeared, in the course of the eighteenth century, they were transformed into *latifundios*, or great rural properties in the hands of a single family. These became confused with the *hacienda*, which latter developed strongly in Totonacapan toward the end of the sixteenth century and the beginning of the seventeenth.

HACIENDAS

Although, in time, the *encomienda* and the *hacienda* became confused, at the start, there were radical differences between the two institutions. In general, these lay in (1) form of ownership, (2) labor employed, and (3) type of production.

With respect to the first, ownership of the *encomienda* was insecure, whereas that of the *hacienda* was definitive; that is to say, the latter might be bequeathed, transferred, or sold, without restriction.

The second difference also was fundamental. Whereas the *encomendero* had forced native labor at his disposition, the *hacendado* was obliged to hire help—although, upon occasion, the Indians might give him manual labor by means of a *repartimiento*. The *hacienda* gave rise to a new social stratum: the peon, composed in part of Indians and in part of imported Negro workmen.

The third distinction lay in the fact that the *encomienda* tended, as a rule, to preserve ancient crops and ancient methods of cultivation, whereas, under the *hacienda*, a different type of economic activity generally was developed—in Totonacapan, particularly stock raising and sugarcane production.

Late sixteenth-century records in the Archivo General de la Nación mention numerous authorizations for Spanish colonists to establish ranches (*estancias*) in Totonacapan. Undoubtedly, the lands were indigenous property, either abandoned by the occupants or taken from them (AGN, No. 4). At the time of the Discovery the great Totonac center of "Cempoala" is credited by one source with between 20,000 and 30,000 *vecinos* (heads of families) (Las Casas, p. 129); by another (Aguilar, p. 39), with "more than twenty thousand houses." But by the end of the sixteenth century, it was reduced to 12 taxable individuals (Epistolario 14:82), and a few years later, to 8 heads of families (*indios casados*) (Mota y Escobar, p. 218). The greater part of its lands were converted into cattle ranches (Mota y Escobar, p. 218), and stock raising became of considerable importance in Totonacapan.[67]

Haciendas dedicated to sugarcane and its elaboration also flourished in Totonacapan, contributing to the reduction in numbers and to the dispersal of the native population,[68] and at the same time stimulating the introduction of Negro slaves. This development applied particularly to southern Totonacapan, and there is no indication that in the northern part of the province the sugar mill and the use of Negro slaves were either general or significant.[69]

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[66] Land *repartimientos* were to be made ". . . *sin agravio para los indios, sin perjuicio de tercero* . . ." (Ots Capdequí, p. 51).

[67] Muñoz Camargo (pp. 261–262) and Torquemada (1:610) describe the situation in almost the same words. According to Torquemada: "Con el crecimiento de los Españoles, han ido creciendo tambien las Estancias; porque como se fueron poblando los Lugares maritimos de Panuco, y Nauhtla, que son los Llanos de Almeria, asi fueron poblando por todas aquellas Costas muchas Estancias, hasta llegar a las de Putinco, y Miçantla, Estancias de la Vera-Cruz, y otras Tierras calientes . . . que es una cosa sin numero, é increpíble los Ganados, que por allí se han criado, y crian, que si no se vé, casi no se cree. Estas Tierras se fueron poblando, en tiempo de este Virrei Don Antonio de Mendoça."

Mota y Escobar (pp. 220–221) lists 18 *estancias* of horses and cattle, in the area between Misantla and Tecolutla; and, in the general vicinity of Papantla, 10 (p. 235), most of the stock being horses and mules.

[68] Díaz del Castillo (3:149–150) attributes the destruction of "Cempoala" to cane and the sugar mill: . . . aun trajo Rodrigo de Albornoz licencia de Su Majestad para hacer un ingenio de azúcar en un pueblo que se dice Cempoal, el cual pueblo en pocos años destruyó."

[69] Although, in Zacatlán, the rulings of Spanish authorities (AGN, Nos. 14, 19, 20) concerning relationships between Indians and Negroes suggest that the latter element must have been sizable. Villaseñor (1:299) mentions *mulatos* in Zacatlán in the mideighteenth century.

We have found no mention of Negroes in the Papantla area. In fact, Papantla does not even appear in the index of a recent "ethnohistorical" work (Aguirre Beltrán), devoted to the Negro in Mexico.

However, in the sixteenth century, *mulatos* are reported in the vicinity of Misantla (Relación de Misantla), and an eighteenth-century document (AGN, No. 7) likewise indicates a Negro element in that zone. In southern Totonacapan, during the early seventeenth century, there was a Negro uprising (Veracruz, Reseña geográfica, p. 7).

DISPERSAL OF POPULATION

Major demographic changes took place in Totonacapan as the aftermath of the Conquest. Obviously, there was a high mortality from disease and excessive toil, although that resulting from military impact was relatively slight. The demographic aspect which interests us most, at the moment, is the broadcast dispersal of the Totonac who fled from the Spanish yoke to take refuge in the more remote and inaccessible areas.

The zone which suffered the sharpest reduction in population was, at the same time, the richest and the most densely populated—namely, the coast belt and the adjacent hinterland. There, such important Totonac centers as "Cempoala," "Quiahuixtlan," and "Tuzapan" virtually disappeared (pp. 8–10). The highlands were by no means immune, but suffered to a lesser degree. There is a direct and positive correlation between intensity of population reduction and intensity of Spanish occupation. In southern Totonacapan, Negro slaves (Aguirre Beltrán, pp. 210, 217–218) and Mexicanos were used to fill, in part, the gap left by native peoples; and in the north and west, there are indications of an infiltration of Mexican and, on a small scale, of Otomí-speaking peoples.

With the wide scattering of the Totonac, major changes in culture were unavoidable. At the time of the Conquest, native culture was urban and highly complex. Transplanted to scattered hamlets, in isolated and inaccessible areas, it seems evident that there must have been a genuine loss of culture. When, in time, pueblos in Totonacapan rose to importance, their ethnic character no longer was native, but dominantly mestizo.

We have mentioned above that the dispersal of population must have made the process of evangelization difficult. It also retarded acculturation to Spanish norms, and the relative isolation in which the surviving Totonac lived permitted the survival of certain basic elements of native culture to modern times.

REDUCCIONES, CONGREGACIONES, AND CORREGIMIENTOS

To impede further flight of Indians from Spanish-controlled zones and to concentrate already dispersed elements of population, recourse was had to *reducciones.* This term was applied to clusters of families, obligated to live in a certain spot. The same settlements likewise were known as *congregaciones;*[70] and later, when official administration was placed in the hands of a special functionary, known as a *corregidor*, the same native congregations came to be called *corregimientos* (Ots Capdequí, p. 40). In short, the three terms are roughly synonymous.

The original objective of the *congregación* was, then, to concentrate the population and thereby to facilitate the task of the missionaries, as well as of the *encomenderos* and the tribute collectors. All these elements were interested in the development of the *congregación*, although occasionally members of the religious orders protested. Adverse opinions were based on the fact that changes in residence worked hardship on the Indians. Without entering deeply into the matter (cf. L. B. Simpson, 1934), it is undeniable that the *congregaciones* left Indian lands vacant and that the Spanish colonists lost no time in gaining control of them.

Early attempts to concentrate the population were not effective, and the problem of dispersal remained so acute that, in 1592, the viceroy, Luis de Velasco, resorted anew to *reducciones.*[71] There is mention of two, on the fringes of our area,[72] but no specific indication that Totonac actually were included.

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[70] A detailed study of *congregaciones* has been published by L. B. Simpson, 1934.

[71] A royal order of 1607 (AGN, No. 4) discusses the aims and difficulties of the *reducciones.* Thus: "El yntento principal que se a tenido en esas Reduziones se a encaminado a que todos los naturales partizipen de la policia cristiana espiritual y temporal con la menor descomodidad suya fuese posible y asi se ayan removido de sus lugares casas y asientos . . ."

The order makes it clear that depopulation has taken place in established communities (". . . lugares formados donde havia Yglesias doctrina y casas bien fabricadas y hasiendas asentadas y beneficiadas . . .") and attempts to protect the Indians from further hardship (". . . que lo que se haze para el bien espiritual y temporal de los yndios no les resulte en mayor daño suyo . . ."). However, scattered natives (". . . los yndios que estan derramados en las quebradas montes y soledades sin poblaziones . . .") are to be concentrated in settlements (". . . a Poblaziones donde puedan ser bien doctrinados y vivir con pulicia en temples conformes a los en que an bivido . . .").

At the same time, an effort was made to correct the wholesale seizure of Indian lands: ". . . si algunas personas se hubiesen metido y apoderado de las haziendas de los yndios que de unos pueblos an sido reduzidos a otros aunque sea con lizencia y merced particular de los Vireyes vuestros antecesores y vos se las quitareis y desposeereis dellas luego dexandolas gozar a los dueños que fuesen dellas . . ."

[72] Velasco established Mexicanos, Otomí, and Tepehua in Huayacocotla and, in the same year, there were *reducciones* in Chicontepec (AGN, No. 11). Both these pueblos are on the fringes of Totonacapan, and it is not impossible that peripheral Totonac were affected.

These measures likewise were ineffectual, and efforts were intensified during the viceroyalty of the Count of Monterrey. During his era, the *congregaciones* were important and widespread in Totonacapan. In 1598, Cristóbal Garibay was appointed to study the problem in southern Totonacapan and adjacent areas, and his journey of inspection was to include specific pueblos, many of them outright Totonac or containing Totonac segments of population—Jalapa, Tlacolulan, Misantla, Actopan, "Cempoala," and La Rinconada (AGN, No. 16). The same year, Rodrigo de Zárate was appointed for a parallel mission to a zone which included many Totonac pueblos of the Sierra—Hueytlalpan, "Jicotepec" (now Villa Juárez), Pápalo, Chumatlán, Zozocolco, "Tonatico," Jonotla, and Jalacingo (AGN, No. 15). However, *reducciones* could not have been effective, for a few years later there were further complaints concerning dispersal of population (cf. Mota y Escobar).

POLITICAL CONSEQUENCES OF THE CONGREGACION

The scattering of population and the system of *congregaciones* eventually destroyed what remained of native political organization.

The reasons are clear. The Totonac, widely disseminated, presumably discarded, more or less rapidly, the political aspects which had been part and parcel of their complicated social organization. We know nothing of their readjustment. But in Tajín today, as in Eloxochitlán, in the highlands, the term "kolopuško" (literally, the oldest man) is used to designate the *jefe político*, or *presidente*, of the modern community; this rather suggests that patriarchal authority once was current.

Congregaciones formed by the Spaniards followed a type of organization then prevalent in Spain. The new authorities were chosen in free election by adult males. Although, socially, the ancient chieftains retained a large part of their privileges and their personal property and were able to transit them by inheritance, their political power was seriously shattered. Nevertheless, the first elections were purely formal, and leaders were chosen from the ancient ruling class. These Indian officials were given Spanish designations of *alcalde* and *regidores*, and above them in authority was an Indian governor, appointed by the Spaniards (AGN, Nos. 9, 13). A Crown official, the *corregidor*, directly supervised the functioning of political organization in pueblos of native peoples. In general terms, this organization did not undergo major change during the colonial era, nor was it altered significantly by Mexican Independence.

As mentioned previously, in prewhite days, Totonac organization revolved about large towns, to which various small, nearby settlements were subject. That this system—including original boundaries, as well as land, water, and fishing rights—was preserved by the Spaniards is convincingly demonstrated by the abundance of disputes registered in the Archivo General de la Nación.

OTHER ASPECTS OF COLONIZATION

A number of phases of Spanish occupation which have not been considered as yet will be treated here.

In the first place, Totonacapan is not rich in minerals (cf. Aguilera), and during the colonial epoch there is no mention of mines of any importance. The exploitation of oil deposits is, of course, an essentially recent development. In other parts of New Spain, Spanish and mestizo cities flourished in mining zones—Pachuca, San Luis Potosí, Guanajuato, and Zacatecas—and Totonacapan lost interest in Spanish eyes precisely because of its lack of exploitable mineral wealth; not one smelting town was founded in Totonac country during the sixteenth century.

In the second place, although Totonacapan was the first coastal area to pass firmly under Spanish control, it had limited importance as a base of communications—both with the interior, by land, and abroad, by sea. Totonacapan proper lay between the two main Spanish lines of communication with the coast: in the south, Veracruz-Jalapa-Perote, and Veracruz-Córdoba-Orizaba; in the north, Tuxpan-"Jicotepec"-Huauchinango.

Furthermore, the difficulty of north-south communications within Totonacapan emphasized its isolation, which only in very recent times is coming to an end. Although a late eighteenth-century map (AGN, No. 6) depicts a north-south road, along the low country of the coast, this route appears never to have attained great importance. In part, water communications compensated for the lack of good land routes, and vessels plied the coast, from Veracruz to Pánuco.

A third aspect also is significant—that is, the profound difference in environment between most of Totonacapan and the homeland of the conquerors and settlers. Natural surroundings were not propitious for the transplanting of many elements of Spanish material culture—such as agricultural practices, house types, and so on. These took root more readily in the cooler lands of the high plateau.

In summary, it may be said that the natural surroundings—absence of exploitable mineral wealth, difficulty of communications, and sharp contrast in environment between the area and Spain—all contributed to the relative isolation of Totonacapan and, by the same token, retarded acculturation.

LOCAL COLONIAL HISTORY

Little is known of local history during the colonial regime, with the exception of the changes in social, political, and economic life which have been discussed above. A great wealth of documents in the Archivo General de la Nación (Ramo de tierras) attests endless boundary disputes between various native communities; but these wranglings cast light principally on land ownership and on social and political life. However, they do indicate that during the colonial era there was little variation within that part of Totonacapan which was firmly under Spanish control. We remain in the dark with respect to the rest of Totonacapan—that is, the groups which had been able, to a greater or lesser degree, to avoid Spanish rule.

INDEPENDENCE

During three centuries of Spanish rule, cultural change in Totonacapan was, on the whole, slow and gradual. But this lethargy was rudely interrupted by the outbreak of the War for Independence. In the course of the succeeding century, the legal position of the Indian was transformed; colonial political organization destroyed; social structure profoundly altered; and acculturation accelerated.

Totonacapan—meaning, now, the zone which, at the beginning of the nineteenth century, still was Totonac in culture and in speech—was subjected to new external pressures. During the nineteenth century, the struggle for land ownership was more prominent than at any time since the sixteenth century, and the seizure of Indian lands reached extraordinary proportions, until the Revolution of 1910 and the new agrarian laws reestablished the rights of the natives. Subsequently, in isolated cases, such as that of Palma Sola, the Totonac were despoiled of their lands, but large-scale land depredation was essentially a nineteenth century phenomenon.

To this situation, Totonac response was substantially the same as it had been 300 years before: urban zones were abandoned and people sought refuge in the more isolated spots—again, with a scattering of population. Nevertheless, a new reaction stands out in sharp relief—namely, the active resistance of a number of important centers and a series of armed rebellions in Totonacapan. Moreover, such national events as Independence, Reform, French intervention, and civil wars, touched Totonacapan and resulted in active Totonac participation.

During the late nineteenth century, exploitation of the rich oil deposits of coastal Totonacapan was begun. A local railroad was built to connect Poza Rica, the main petroleum base, with Tuxpan, on the coast; inland, it was extended to the Palma Sola area. Oil depots were established; new roads were opened—and the superficial aspects of coastal Totonacapan began to change.

Some of the principal aspects and consequences of the above developments will be mentioned briefly below.

INSURGENT MOVEMENT IN TOTONACAPAN

In October of 1811, the war for national Independence had begun in Veracruz—in Teocelo, Jico, Coatepec, Ixhuacán, and Ayahualulco (Lerdo de Tejada 2: 76)—and the rebels dominated a wide zone in the vicinity of Jalapa and Perote. This initial impulse soon was extended to Totonacapan and, among other places, Naolinco, Misantla, Papantla, and Coxquihui (Lerdo de Tejada 2: 77–83; Rivera 1: 345) rapidly were converted into centers of insurgent movement. Perhaps because of topographical character, perhaps because of native support, the same areas which served the Totonac as refuge spots became also the supply bases of the insurgents during the blackest days.[73] Probably both factors are involved: on the one hand, the terrain lends itself extremely well to an army battling against superior forces; on the other, Totonac loyalty to the leaders of the war for Independence was unwavering.

Fighting was harsh in Totonacapan. Papantla, in insurgent hands, was recovered by the Spaniards in 1813, to be taken again by the rebels the following year. Once again, in royalist hands, it was besieged by the rebel, Serafín Olarte, in 1819, and was partly burned. Again, about 1820, Papantla became "the target of the rebels and of the royalists" (Rivera 2:129). Misantla also changed hands from time to time and was burned in 1815, and again in 1817. Assuredly, this strife was shared by other pueblos of the vicinity—by Tecolutla, Nautla, Naolinco, and Colipa, for example.

Highland Totonacapan likewise was the scene of bloody battles. In 1811, Zacatlán was occupied by the insurgent chief, Osorno (Bustamante 1:253), and it served him as a practically invulnerable base, from which he organized expeditions against Puebla, Huauchinango, Tulancingo, Pachuca, and other nearby towns.

The one insurgent center which was outright Totonac—in population, in troops, and in leaders—was Coxquihui, not far from Papantla. From 1813 to 1820, this center managed to hold off successive royalist expeditionary forces. Its leader was the famous Totonac rebel, Serafín Olarte, whose son, Mariano, continued in his father's steps.

OLARTE AND COXQUIHUI

Serafín Olarte was a native of the Papantla area. Even before the War for Independence, he apparently enjoyed considerable prestige among the Totonac, and through his exploits in battle later became the undisputed military leader of northern Totonacapan. In 1813, he instigated an uprising in Coxquihui and managed to assemble a force of three or four thousand with whose assistance he held Coxquihui, defeating one after the other, seven royalist forces sent against him. He assisted Guadalupe Victoria in taking Boquilla de Piedra, on the coast, near the mouth of the Río Cazones, and in keeping this port open to receive arms and ammunition from the United States and from England. He held the royalist garrison in Papantla constantly in check, cutting its communications with the coast. He collaborated actively with Osorno, the rebel leader who held Zacatlán. And he distinguished himself in the battle of Tlaxcalantongo. At one time, "Serafín Olarte was the only man still fighting for the cause of Independence on the north coast of Veracruz" (Olivo, p. 199).

The exploits of Olarte and his Totonac forces are genuinely outstanding, especially in view of the fact that the majority of his troops appear to have relied on the bow and arrow, the latter with stone point (Olivo, p. 200; Núñez y Domínguez, p. 54). Nevertheless, it would appear that the Olartes, father and son, were not the only important leaders in northern Totonacapan, for Rivera (2:126) mentions "hostilities in the area of Coyusquihuy" and speaks specifically of Víctor del Angel, Venancio Angulo, Agustín Muñoz, José Santiago, Manuel Morales, as well as the two Olartes "and others."

In November of 1819, Serafín Olarte united all his forces for an assault on Papantla. Beaten off by the royalists, he withdrew to the hills, but lost his life in a subsequent encounter. His body was recovered by the Spaniards, and his head, nailed to a pole, was exhibited at the Cruz chiquita, near Papantla.

The chief background for the drama of Olarte and his Totonac was Coxquihui; but by this term we should not understand the small municipal unit which bears that name today. In fact, the limits given by Bustamante[74] coincide roughly with those of nineteenth-century Totonacapan as a whole. The same author pointed out the utility of the terrain as a refuge and as a base for guerrilla warfare, suggesting that the Mexicans bear this in mind, in case of subsequent threats to independence. Not many years later, as a result of the French invasion, Totonacapan again became an asylum for Mexican patriots.

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[73] According to Lerdo de Tejada (2: 77–83), Naolinco, Misantla, and Papantla several times were headquarters for the leaders of the revolution. Rivera (1: 345) makes similar statements and adds explicity (2: 44) that Misantla was a constant insurgent asylum.

[74] Coxquihui "es un terreno muy montañoso y lleno de bosques . . . confina por el Oriente con el Golfo de Mexico, y por el Poniente con Mextitlan y Huasteca: esta rodeado de Oriente a Poniente por dos rios, el de San Pedro y San Pablo al Norte, y el de Nauhtla al Sur . . ." (Bustamante 5: 42–43).

VARIOUS ASPECTS OF THE WAR FOR INDEPENDENCE

One aspect of the War for Independence which comes immediately to attention is the important participation of the native populace. Certain it is that in other parts of Mexico, native support was strong and decisive. But there, the largest and most enthusiastic contingent appears to have been formed by the great masses of Indians, reduced to peonage by the colonial system. This was not so in Totonacapan, where the principal centers of rebellion were Totonac pueblos removed from Spanish influence and from the socioeconomic system of the *haciendas*—pueblos which maintained their communal lands, and where the enemy, in the dual role of white and *hacendado*, scarcely existed.[75]

But it was precisely this isolated Totonac element—that farthest removed and most disinterested in colonial life—which participated so vigorously in the War for Independence. The motives are not clear from any of the contemporary documents or from later studies. The participation is the more inexplicable, since at no time during colonial history was there a major Indian uprising in Totonacapan, where unrest was confined to local boundary squabbles. Moreover, in 1810, Spanish authorities had attempted to improve the condition of Indian groups, precisely because they were considered potentially important in the imminent struggle.[76] At the same time, the viceroys were insisting on stricter compliance with the protective laws contained in the Recopilación de leyes de Indias.

It would be unwarranted to assume any genuine growth of national sentiment in Totonacapan at this time, since even today, it is little evident, at least among groups which have remained relatively aloof from Spanish and Mexican culture. An explanation will have to be sought elsewhere. It is possible that Bustamante (1:253) gives some insight when he reports that in the course of a royalist campaign in the highlands, about 1811, the Spaniards indulged in reprisals and cruelties, burning hamlets and shifting the population from one spot to another. Logically, such measures must have aroused resentment and perhaps influenced the Totonac to ally themselves with the rebel cause.

The results of Independence were not very evident in Totonacapan for a good many years. In accordance with its liberal principles, the Independence established the legal equality of all Mexican citizens; yet, at the start, this theoretical change could have had little significance for the Indian.[77]

Neither social structure, nor political organization, nor land ownership was greatly affected, for the time being, in Totonacapan, where, during the years following the Independence, the situation differed little from that of colonial times. Although we have found no record of further grants in Totonacapan, a great stretch of land near Papantla was given by the Mexican Government to General Guadalupe Victoria, in payment for his services during the War of Independence (Flores, p. 9). Officially, the lands in question probably were the property of the Spanish Crown, but even so, the grant must have reduced very considerably the amount of land available to the Totonac of the Papantla area. In fact, it probably directed settlement toward the west, for the tract of Victoria lay immediately east of the city. In Mexico as a whole, such grants strengthened the body of great landholders, by giving them extensive rural holdings.

We know nothing of the cultural changes which must have taken place in Totonacapan through displacement of combatants, greater contacts with people of other culture, and the new military organization. Unfortunately, there is no record of how the Totonac adapted to war—for example, of their methods and organization, of their forms of combat, of the appointment of leaders, and so on. In fact, about all we know is that the Papantla area appears to have suffered materially, to judge from the account of a writer in that pueblo, in 1845.[78]

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[75] Years after the Independence, it is said of Papantla: ". . . los indígenas cultivaban sus tierras de comunidad y explotaban los productos silvestres . . ." (Flores, p. 9).

Bustamante (5:43) describes conditions in Coxquihui, presumably just prior to the War for Independence. He evidently is thinking of Coxquihui in a more restricted sense than that indicated in the previous footnote: ". . . su terreno está ocupado por tres o cuatro mil indios, y algunas castas con pocos blancos. Hace más de treinta años que se arruinó el unico pueblo que habia en él, por lo que han subsistido hasta ahora esparcidos por los montes y barrancas sin proporción de cura ni justicia."

[76] For example, in 1810, by royal decree, the Indians were to be freed of tribute and lands allotted more generously among them (Legislación mexicana 1:131). An 1812 decree abolished obligatory "personal service" and provided for further land allotments to adult male Indians (Legislación mexicana 1:396). Still a further decree, in the following year, abolished corporal punishment (Legislación mexicana 1:425).

[77] Mendieta y Núñez (p. 16) remarks that: ". . . siquiera en la época colonial se fraguó todo un sistema legislativo de elevadísimo espíritu en la Recopilación de las Leyes de Indias, para protegerlo, para reanimarlo; siquiera en aquel tiempo existió la posibilidad legal de su redención, pero a partir de la Independencia . . . el indio o quedó olvidado fuera de la ley, o quedó oprimido o explotado dentro de la ley."

THE MARIANO OLARTE UPRISING

The years following Independence were by no means tranquil in Totonacapan. Bausa (p. 337) reports repeated civil dissension in the Papantla area, but, as far as we know, the Totonac as such did not intervene. The only exception, and an important one, was the revolution of Mariano Olarte, in northern Totonacapan, with the Totonac themselves as instigators.

Mariano Olarte had served at the side of his father, Serafín Olarte, in the War of Independence. With the rank of second lieutenant (*alférez*), he had participated in the capture of Boquilla de Piedra, and he had been commended particularly by Victoria. Following his father's death, he continued the struggle as leader of the Totonac until 1820 (Flores, p. 12). After Independence, Victoria appointed him lieutenant colonel, a commission later confirmed by Vicente Guerrero and Santa Anna. Olarte remained in the Mexican army until 1836, when his participation in an unsuccessful conspiracy forced him to seek refuge among his faithful Totonac. The Olarte prestige had not disappeared, and that, in combination with the discontent of the natives of the Papantla area enabled him, at the head of a large Totonac force, to demand the surrender of the Papantla garrison, in November of 1836. After a brief battle, the authorities withdrew from the city, and Olarte entered triumphantly (Flores, p. 27).

The discontent behind the uprising is far from clear. Certain published documents (Flores, pp. 69–89) suggest it began with a church prohibition against Holy Week processions. But other factors such as inroads by *estancia* cattle on Totonac plantings and boundary disputes also were involved. In any case, when the Government decided to send a force against Olarte, he had assembled 5,000 natives, of whom 800 had firearms. Government troops recaptured Papantla the middle of December, of 1836, only to be trapped within the city by Olarte forces (Flores, p. 47).

The Government then decided to negotiate, taking advantage of the prestige of Guadalupe Victoria. But the discussions between the latter and Olarte were not successful. The latter demanded satisfaction for the natives of Papantla, and that he be allowed to live within the city, with the title, "father of the Indians." He further insisted on the adoption of a plan for a national federal organization. By solving local disputes to their satisfaction, Victoria managed to reach an agreement with some of Olarte's lieutenants. Abandoned by the majority of his men, Olarte raised the siege of Papantla and retired to Coatzintla, pursued by Government forces. With only 200 men, he gave battle and was defeated.

Once again, he withdrew to the hills and obtained support in several quarters: Temapache, Tihuatlán, Coatzintla, and El Estero (Flores, p. 58). Thereupon, Olarte launched a guerrilla war which extended as far as Huauchinango, Tulancingo, Chicontepec, Tuxpan, Jalacingo, Altotonga, and Misantla. During all of 1837, Totonacapan again burned in open rebellion. The following year, Olarte died in an encounter with Government forces, and as though he had been its only sustenance the revoluntary flame slowly died out.

FROM THE OLARTE REVOLT TO THE REFORM

The defeat of Olarte followed the pattern of a typical native uprising and resulted in a sort of general Totonac surrender. As before, this involved retirement of population to spots where it was easy to evade the control and the demands of Mexican authorities. Bausa (p. 413) blames military conscription and excessive taxation for the flight of numerous Indians from the Papantla vicinity, and an official report of the Governor of Veracruz (Veracruz, 1845, pp. 38–40) gives the same reasons, noting that the Indians fled "from the towns to hide in the *barrancas* and most inaccessible forests."

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[78] His statements are characterized by abundance of lamentation and paucity of concrete data: ". . . Papantla . . . fué en fines del próximo pasado y principios del presente siglo, hasta el año de 1812 en toda la costa de Barlovento, el punto mayor de atención por su numeroso vecindario, por sus producciones agrícolas y por sus exportaciones comerciales . . . pero se atravesó la revolución de 1810, que este pueblo abrazó con entusiasmo . . . y he aquí trabada una lucha ostinada y sangrienta por cerca de diez años, lucha que dió por resultado desastroso la desolación, el horror y la muerte . . . Se entronizó aquí el mas inaudito despotismo real, y él acabó de consumar la ruina de un pueblo admirado poco antes por sus riquezas naturales" (Bausa, pp. 376–377).

Nevertheless, upon two occasions, the warlike spirit of the Totonac blazed again, before dying out, apparently definitively, at the end of the nineteenth century. One outburst was provoked by the Wars of Reform and by the French invasion; another, by the surveying commissions sent to Totonacapan during the dictatorship of Porfirio Díaz. A brief discussion of these events follows.

THE REFORM LAWS

It has been remarked above that the mere achievement of Independence did not produce major changes in Totonacapan with respect to social structure, political organization, or property ownership. Spanish authorities simply were replaced by Mexican; and society, based largely upon communal landholdings, to a lesser extent on private ownership, continued as before. However, outside Totonacapan, and along its fringes, it is possible that peonage may have been intensified through the land grants mentioned previously.

Starting in 1856, the laws known as those of *desamortización*, or disentailment, produced great changes in Totonacapan, in the course of which the greater part of its colonial heritage vanished. This new era was opened by a decree of June 1856. Government intent was to destroy the inalienable quality of the property belonging to civil and ecclesiastical bodies and, through payment of a sum by the actual occupants, to convert the latter into owners. Under the law, communal lands of native pueblos were included, and such properties were to pass into private hands.

For a number of reasons, the outcome was quite distinct from the intent. In the first place, the decree allowed a period of only 3 months, during which the property was to be converted into private holdings. Lands which had not been transferred at the end of this time became public property, available to anyone upon application and payment, or available for Government grants.

In the second place, all communal lands not actually occupied or cultivated were considered public, and the decree provided for their sale, without taking into account the requirements of the Indians, whose system of milpa agriculture necessitated a tract of land far greater than that actually under cultivation at any given time.

In the third place, great numbers of Indians filed no claim for possession of their lands—because of isolation, of unfamiliarity with law and legal mechanism, and because there no longer existed officials whose responsibility was to protect indigenous interests.

The moment communal lands disappeared legally and claim for them as private property had not been filed, possession of such lands fell to the mercy of unscrupulous speculators who, supported by Government decrees, lost no time in despoiling the Indians. Moreover, even when the natives filed claim and actually received land grants, often they lost them—through usury, violence, or pseudolegal procedures.[79] *Haciendas* and speculators took it upon themselves to absorb the major part of the small properties created by the laws of *desamortización* and, at the same time, they managed to seize a large part of the Indian patrimony, owing to the classification of many communal lands as public property.

This legal and actual situation prevailed until new agrarian laws were formulated following the Revolution of 1910, when an effort was made to correct an old wrong and to restore their rights to the Indians. The importance of the old nineteenth-century laws is evident from an estimate "that in 1854 there were 5,000 villages of various types . . . holding in collective ownership ejidos aggregating around 45,000 square miles" (E. N. Simpson, p. 25).

DISENTAILMENT

In Totonacapan, the liquidation of communal lands was long and difficult, extending from 1856, at least to the close of the century. Application of the laws apparently began on the outskirts of the area and rapidly became complicated by the French invasion and the establishment of the ephemeral empire of Maximilian. As a consequence, the historical picture is extraordinarily confused—on the one hand, because new Indian leaders appeared, fighting the French and their partisans; and, on the other, because of local uprisings against the republican authorities.

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[79] Quevedo (p. 12) observes that ". . . en sólo media centuria se palpó que en vez de que la condición económica de los labriegos indígenas mejorara se empeoraba ; un gran número enagenaron sus lotes de terreno del reparto, o los abandonaron . . . El reparto de los Ejidos y demás terrenos del común de los pueblos fué por el contrario una medida perjudicial para el bienestar del indígena."

In the former case, Totonac chiefs, such as Simón Tiburcio (cf. ftn. 90, p. 54), Manuel Pérez, and others, with native troops, distinguished themselves in the war against Imperialist forces (Olivo, p. 388). With respect to internal strife, the causes are not mentioned specifically, but the chances are very strong that they resulted from efforts to reduce communal lands to private ownership. In any case, it is clear that there were mutinies and uprisings among the Totonac (Olivo, p. 391; Alatorre, pp. 25–26), of which the most important was the series in Misantla, particularly that of 1865.[80] Then, the situation was so acute that the republican authorities chose to surrender Misantla and the neighboring zone to the Imperialists, under truce, so that the latter might have the responsibility of protecting the "white" inhabitants from the Totonac.

That local resistance to the application of the land laws was stubborn and prolonged is clear from a report issued by the Governor of Veracruz, in 1871.[81] A decade later, another governor still faced the same problem. There was even greater pressure, a few years later, that communal lands be divided (Veracruz, 1887, pp. 41–42), and it is significant that the application of the land laws in Papantla coincided with a new Indian uprising, which affected not only Papantla, but also Misantla and Jalacingo (Veracruz, 1887, pp. 35–41). This agitation was under the leadership of a Totonac known as the *médico santo*, concerning whom, as usual, there is virtually no information. Once the rebellion was quashed, division of lands proceeded, now complicated by new problems: the laws of colonization (*leyes de colonización*) and the exploitation of oil deposits.

LAWS OF COLONIZATION

Sparse population, combined with an abundance of land in the new republic had motivated the general law of colonization of 1826, under which it was hoped, through an offer of free lands, to attract numerous immigrants and, at the same time, to interest Mexican citizens in increasing agricultural production. To these ends, the National Government left each State free to legislate (Zavala 2:137), in accordance with local conditions.

Attempts at colonization did not begin to produce marked results until the last quarter of the nineteenth century. In 1875, the governor authorized the formation of commissions to survey public lands. They were paid in land, each commission being allowed to delimit a maximum of 2,500 hectares, to a third of which it had claim for its services.

The laws of colonization and the activities of the commissions were fatal to the remnants of native communal—and even private—lands.[82] All communal lands which had not been divided, and all private lands not legally registered—in short, the great majority of native holdings in Totonacapan—were considered public property, to be measured by a survey commission, which was to reserve a third of the land for itself.

The grabbing of Indian lands reached unprecedented proportions. Between 1881 and 1889, 32,240,373 hectares were surveyed by only 29 companies or individuals; these received as recompense, 13 million hectares, and acquired, by purchase, 15 million more (Mendieta y Núñez, pp. 75–76). Accordingly, *latifundismo*—a heritage of colonial times, accentuated by the War of Independence and the Reform laws—grew vigorously at the expense of Indian groups.

To date, no study has been made of the application of the surveys nor of the outcome in Totonacapan. Nevertheless, the elder residents of Tajín recall the survey clearly and the bloodshed which it provoked (ftn. 88, p. 54). It seems likely that conditions in the Papantla zone may be taken as representative of what must have happened, to a greater or lesser degree, elsewhere in Totonacapan.

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[80] During which ". . . asesinaron a cuanta gente de razón pudieron sorprender . . . y destruyeron y se robaron todo el material de guerra" (Alatorre, p. 26).

[81] "Ha estado luchando el Gobierno del Estado por realizar la división de terrenos de la comunidad de indígenas . . . Sin embargo, muy poco se ha conseguido . . . En varios pueblos se ha verificado la división de dichos terrenos; pero en comparación de los que aún quedan por dividir es realmente muy poco e insignificante lo que se ha hecho . . . se estableció una pena demasiado severa para estimular a los pueblos al cumplimiento de la ley, y a pesar de esta precisión nada se ha avanzado" (Veracruz, 1871, p. 50).

The same report adds (p. 52): "Es verdad que no sería remoto que llegare el caso en que deba usarse la fuerza y en que tambien se derramare sangre . . ."

Years later, the "reparto de los terrenos que pertenecieron a las extinguidas comunidades, solo en cuatro o seis pueblos se ha cumplido lo prescrito por la ley de la materia . . ." (Veracruz, 1888, pp. 39–40).

[82] According to the law of 1863, public lands include ". . . los terrenos de la República que no hayan sido destinados a un uso público por la autoridad facultada para ello por la ley ni cedidos por la misma a título oneroso o lucrativo a individuo o corporación autorizada para adquirirlos."

The laws of colonization and the activities of the survey commissions did not terminate until 1902, when a new law nullified preceding ones. But until 1915, no measures were taken to recover holdings which had been acquired contrary to the spirit of the law of 1856, and which had been procured in 1876, or subsequently, when the surveys affected the property of native pueblos.

Current forms of land ownership in Totonacapan are a direct outcome of the laws of reform and of colonization, followed by the agrarian laws of the Revolution. In short, communal property has disappeared; and side by side, are private holdings as well as lands held under the new ejido system. Among the Tajín Totonac, land is privately owned, although several adjacent communities operate under *ejido* organization.

OIL EXPLOITATION

The rich petroleum deposits in parts of coastal Totonacapan attracted attention relatively early. About 1868, Autrey explored the Papantla area, and in 1869, wells were drilled on the ancient *hacienda* of Congas, now known as Furbero, since an Englishman, Furber, was in charge of the enterprise (México, El petróleo de México, p. 13).

In 1901, Government concessions were extended to oil companies and exploitation began on a large scale. At this time, activities centered farther to the north, in the Huasteca. However, in the early 1930's, with the discovery of rich deposits in the Poza Rica district, the Papantla-Coatzintla zone was invaded by major oil operations. In Tajín itself, several tests were made; a well was drilled; and roads were opened to permit passage of heavy machinery from Papantla and Coatzintla. After 7 years, the Tajín zone was abandoned, although the federally owned oil company still holds title to two parcels of land in the community. Moreover, during 1949, two wells were drilled in San Antonio, on the very fringes of Tajín, and it seems likely that oil operations will make further inroads into Totonac territory in the vicinity of Papantla and Coatzintla.

SUMMARY

The most visible results of the laws of colonization, of the land surveys, and of oil exploitation are related to the chronic problem of Totonacapan—that is, to the dispersal of population toward the heart of the zone. With the passage of years, each dispersal faced a progressively more limited area in which to take refuge and, as a consequence, less attractive terrain.

One undoubted result has been major acculturation, especially in the realm of property, and in political and social organization. As we have seen, the system of communal lands current during colonial times was essentially a continuation of pre-Conquest conditions. Its decadence and disappearance, during the first century of independence, caused the demise of associated forms of political and social structure. Moreover, Totonac groups which had remained aloof from Spanish contact came more and more into the sphere of Mexican influence, particularly in political and social aspects.

The present situation in Tajín may be considered typical of the cross which has resulted from all these influences, to which were added further influences emanating from the Revolution of 1910.

THE TAJIN TOTONAC

ENVIRONMENT

The State of Veracruz includes a long, narrow strip of coast along the Gulf of Mexico and part of the adjacent highlands to the west. Just north of the central part of the State is the provincial center of Papantla, and 6 or 7 km. southwest of it lies Tajín (map 5). The elevation is low; Papantla

This is rugged terrain, which lies between the itself is about 300 m. above sea level, and Tajín probably is close to a hundred meters lower.[83]

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[83] We took a small series of readings, over a period of time, with a Paulin altimeter. Naturally, these varied widely, according to temperature and storm conditions. Our guess at 200 m. for the elevation of Tajín is based partly on these readings, partly on the fact that the trail from Papantla to Tajín descends sharply.

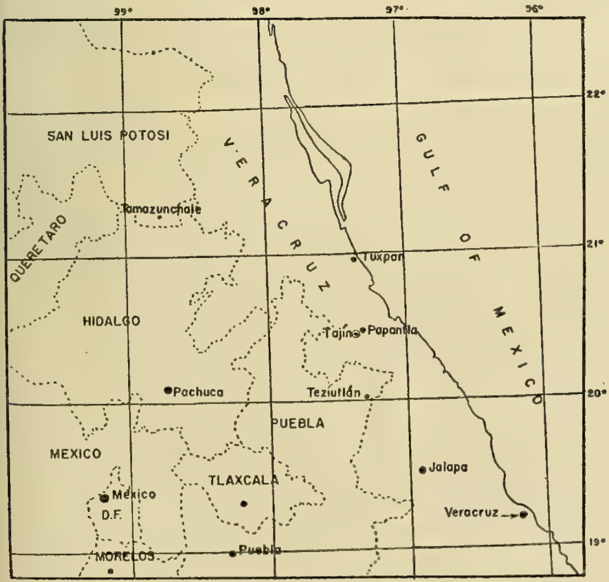
TABLE 2.—*Annual precipitation, Papantla*[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925	-------	-------	-------	-------	-------	-------	-------	76.4	206.7	120.6	65.0	43.7
1926	29.5	10.2	48.4	54.8	98.0	300.6	204.4	95.7	288.1	172.1	35.1	19.3
1927	73.9	37.1	24.8	27.9	172.9	218.9	125.0	67.1	271.0	227.5	15.0	71.4
1928	28.1	52.2	11.1	3.0	152.7	236.3	95.5	81.5	195.1	175.6	211.6	99.0
1929	13.5	21.2	37.0	.5	74.6	266.7	188.5	120.5	377.5	110.0	118.9	186.0
1930	69.5	38.5	13.8	53.2	79.5	92.1	144.2	15.0	49.0	526.2	62.1	58.5
Average	42.9	31.8	27.0	33.9	115.5	222.9	151.5	76.0	231.2	222.0	84.6	79.6
1931	45.9	61.0	34.1	66.7	354.2	204.2	356.7	175.5	480.7	185.7	35.5	74.7
1932	27.5	27.0	39.4	12.0	91.2	82.7	188.5	248.0	131.2	296.0	64.7	35.7
1933	49.7	31.7	10.1	26.9	7.5	73.5	335.9	468.2	310.2	152.2	84.5	6.2
1934	72.1	22.2	45.5	185.4	64.1	48.5	40.0	77.6	341.1	107.7	115.5	108.4
1935	61.0	22.7	1.5	61.8	146.4	235.0	179.9	151.5	285.5	245.7	41.8	86.7
1936	50.4	30.8	56.0	114.7	81.5	87.3	294.5	181.0	222.2	430.0	95.5	12.4
1937	54.0	43.5	123.1	22.4	70.8	85.7	113.3	59.8	125.3	236.5	75.7	131.3
1938	68.0	93.1	25.1	94.7	27.0	55.3	25.8	154.3	261.5	68.0	83.3	27.5
1939	75.1	29.2	98.9	66.0	96.9	120.7	91.8	73.8	320.0	165.2	69.6	50.3
1940	37.8	5.7	52.6	56.7	59.5	139.7	100.4	23.9	83.4	44.2	126.1	117.0
Average	54.1	36.7	48.6	70.7	99.9	113.3	172.7	161.4	256.1	193.1	79.2	65.0
1941	81.6	54.8	79.4	73.7	126.7	207.7	142.3	94.0	314.5	154.1	116.1	72.5
1942	54.1	32.2	38.7	-------	-------	-------	-------	-------	-------	-------	-------	-------

[1] The record is in millimeters. These figures have been made available through the courtesy of the Tacubaya office of the Servicio Meteorológico Mexicano.

narrow strip of coast plain and the base of the great escarpment of the central plateau. There are no outstanding peaks, no great scarps, and no deep valleys, yet there is virtually no level land. Low hills succeed one another with few breaks (pl. 1). Papantla itself is huddled among a cluster of hills, and most of the land within the limits of Tajín is broken.

There are no major streams in the immediate vicinity of Papantla and Tajín. The Río Cazones runs considerably to the north and the Río Tecolutla lies well to the south. Tajín has a number of minor arroyos which drain south to the perennial Arroyo de Tlahuanapa which, in turn, drains to a tributary of the Tecolutla. There are many annual springs, but few perennial ones. Attempts at well digging[84] have been made in Tajín, with little success; the only moderately useful well cannot be relied upon in time of real water shortage. For many years, Papantla has asked for Federal aid to solve her chronic water problem; and during years of scant rainfall, Tajín suffers acutely (pp. 70–71).



MAP 5.—The location of Papantla and Tajín.

Precipitation is highly irregular—so much so, that averages are misleading (table 2). For example, April of 1929, had 0.5 mm. of rain; but April of 1934, 185.4 mm. Similarly, in September of 1930, there were 49.0 mm. of rain; but September of the preceding year is credited with 377.5 mm.; and of the succeeding year, with 480.7 mm. It is small wonder that the Totonac farmer is mightily preoccupied with the rainfall and that one year he may have abundant crops, the next, virtually none.

The bulk of the precipitation falls between May and October, in the form of violent cloudbursts (*aguaceros*). These begin in earnest during June. They beat through the walls and roofs of the houses, and they wash out the fields and the trails. Sometimes they leave the latter in such bad condition that pack animals mire and perish in the mud. Following the rains of 1947, the skeletons of four such ill-fated beasts were strewn along the trails.

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[84] The sixteenth-century Relación de Papantla says, "y tienpo de seca no tiene casi agua." It makes no mention of wells, for which there appears to be no Totonac term.

As the *aguaceros* taper off, they are replaced by a light but persistent drizzle, known as the *chipichipi*, which may continue virtually without a break through the fall, into spring. Literally, no month of the local calendar consistently is free of precipitation, and about the only time a moderate occurrence of clear, sunny weather is expectable is from February through April. Yet Bishop Mota y Escobar (p. 234), who visited Papantla early in February of 1610, writes plaintively, "It rained on me in this town eight days without stopping." Papantla has the dubious distinction of having an annual average of fewer than 60 clear days and of more than 150 overcast days (México, Atlas climatológico).

During the spring months there may be a brief drought, which assumes catastropic proportions if it continues through May. The humus topsoil is thin—in many places, not more than 50 cm. in depth. It overlies a limestone formation which presumably is highly absorbent, so that with a few weeks of sunny weather, the surface moisture is evaporated. Accordingly, the ground cracks open; the springs and small arroyos dry; and the fields are parched. For want of water, the vanilla blossom may not open, and the chief cash crop thereby is lost; the maize wilts, and the staple food fails. The last excessive drought took place in the spring of 1945, but in May of 1948, the fields were so dry that two—one of cane and another of pasture—caught fire. The supply of potable water will be treated in greater detail elsewhere (pp. 70–72).

During most of the year, the humidity is high (México, Atlas climatológico). Because of this, the heat from May through August may be oppressive (table 3). However, in December and January, the temperature sometimes averages less than 18° C. Combined with the humidity, the result is uncomfortably moist and chill. During the season of 1947, our clothing sprouted mold; our typewriters and cameras were speckled with rust; and our stationery supplies were so limp they hardly could be handled.

In summary, we hold no brief for the local climate.

Prevailing winds are from the north and accordingly are known as *nortes*. These Gulf coast winds are famous throughout Mexico and are mentioned at length in many of the old accounts, largely because of the hazards to navigation. In the fall, the *nortes* arrive, lashing the countryside and bringing cold rains. Informants distinguish between wet and dry winds. Those of the spring are dry, and in March and April, heavy winds may do considerable damage to maize fields.

Scenically, the country is very beautiful (pls. 1, 2). The rough hills are covered with heavy tropical rain forest, green and lush throughout the year. Of virgin stands (*monte alto*),[85] with

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[85] In Totonac, kiwi is tree; kakiwín, *monte* or forest. There seem to be no special terms for *monte alto* and *monte bajo*.

TABLE 3.—*Annual temperature, Papantla* [1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1925	-----	-----	-----	-----	-----	-----	-----	-----	26.4	25.9	20.6	15.8
1926	15.9	20.7	22.4	24.2	26.8	27.9	27.2	27.7	26.7	25.7	21.2	21.1
1927	19.7	22.5	22.3	26.3	28.9	28.4	27.2	27.6	25.9	24.3	22.9	18.1
1928	17.4	-----	22.7	23.6	25.8	27.9	26.4	26.9	25.5	24.7	21.0	16.1
1929	18.9	18.9	22.6	27.0	26.8	26.7	26.1	26.1	25.5	24.2	19.8	16.9
1930	16.1	19.7	21.3	25.5	28.5	27.9	27.4	28.5	28.9	25.0	20.2	16.6
Average	17.6	20.4	22.3	25.3	26.9	27.8	26.9	27.4	26.5	24.9	20.9	17.4
1931	16.7	19.3	19.9	21.8	25.5	27.2	27.3	26.4	26.2	25.1	22.5	18.9
1932	20.0	22.3	20.9	25.7	27.3	29.5	27.6	28.0	27.3	23.3	19.3	19.4
1933	19.5	20.1	23.3	27.0	29.7	27.6	29.0	26.5	26.1	24.7	22.0	20.4
1934	19.8	21.2	21.0	25.4	26.9	28.8	28.3	28.2	27.4	26.6	24.1	19.5
1935	22.2	20.0	25.0	28.0	28.8	27.6	27.2	27.4	26.6	25.0	23.5	19.3
1936	19.4	20.0	23.8	24.4	26.3	27.9	26.4	27.0	26.9	24.2	19.6	19.5
1937	21.6	21.9	21.3	25.8	26.8	27.5	26.9	27.5	27.0	24.8	22.1	19.2
1938	18.9	20.7	26.2	25.5	27.5	27.0	27.8	27.9	25.9	24.3	19.7	19.0
1939	19.7	20.1	22.1	24.3	26.8	26.8	27.0	26.9	25.3	23.6	18.8	19.6
1940	15.6	18.7	21.0	24.0	25.6	27.2	26.4	27.9	26.5	24.4	21.1	19.6
Average	19.3	20.4	22.4	25.2	27.1	27.7	27.4	27.4	26.5	24.6	21.3	19.4
1941	18.5	19.1	20.4	25.0	26.3	27.5	28.2	27.4	26.4	25.6	21.3	19.7
1942	17.5	19.5	21.0	-----	-----	-----	-----	-----	-----	-----	-----	-----

[1] The record is in centigrade. These figures have been made available through the courtesy of the Tacabaya office of the Servicio Meteorológico Mexicano.

their precious woods, such as cedar and mahogany, few remain at Tajín. The examples we have seen have a somber magnificence. Undergrowth is not particularly heavy, perhaps because little sun penetrates, but the tall trees are festooned with a great wealth of vines, and sometimes with orchids and bromelia. Map 6 gives a rough indication of the patches of *monte alto* which remain at Tajín, but with the exception of three plots on the southwestern fringes, these are of very limited extent.

Most of the land has been cleared in years past, and the areas not actually under cultivation are covered by second-growth timber, known as *monte bajo*. When virgin stands are felled, reforestation is relatively slow, and the first vegetation to appear is a profusion or "*ortiga*, wild *papayo* [Appendix C, Nos. 56, 172], and a plant called Santa Catalina." However, second growth, when cut, returns with rapidity, to the great inconvenience of the Totonac farmer. The field which is being cleared in plate 6 has been abandoned only 25 to 28 years, yet the size of the trees and the density of the vegetation are impressive. Owing to this rapid reforestation, Tajín has virtually no erosion problem, although a lone farmer complains that there is considerable washing in his hillside milpa.

As the name implies, *monte bajo* does not reach the elevation of the virgin forest. To a certain extent, it includes some of the same trees and vines, but it is, moreover, characterized by a dense mass of shrubs and low trees. *Monte alto* appears effectively to resist the introduction of extraneous plants, but once it has been cut, the way is opened for a large assortment of intrusive elements. As a consequence, the plant associations are largely distinct. At the end of Appendix C will be found a list of trees and vines which Modesto González considers characteristic of virgin forest.

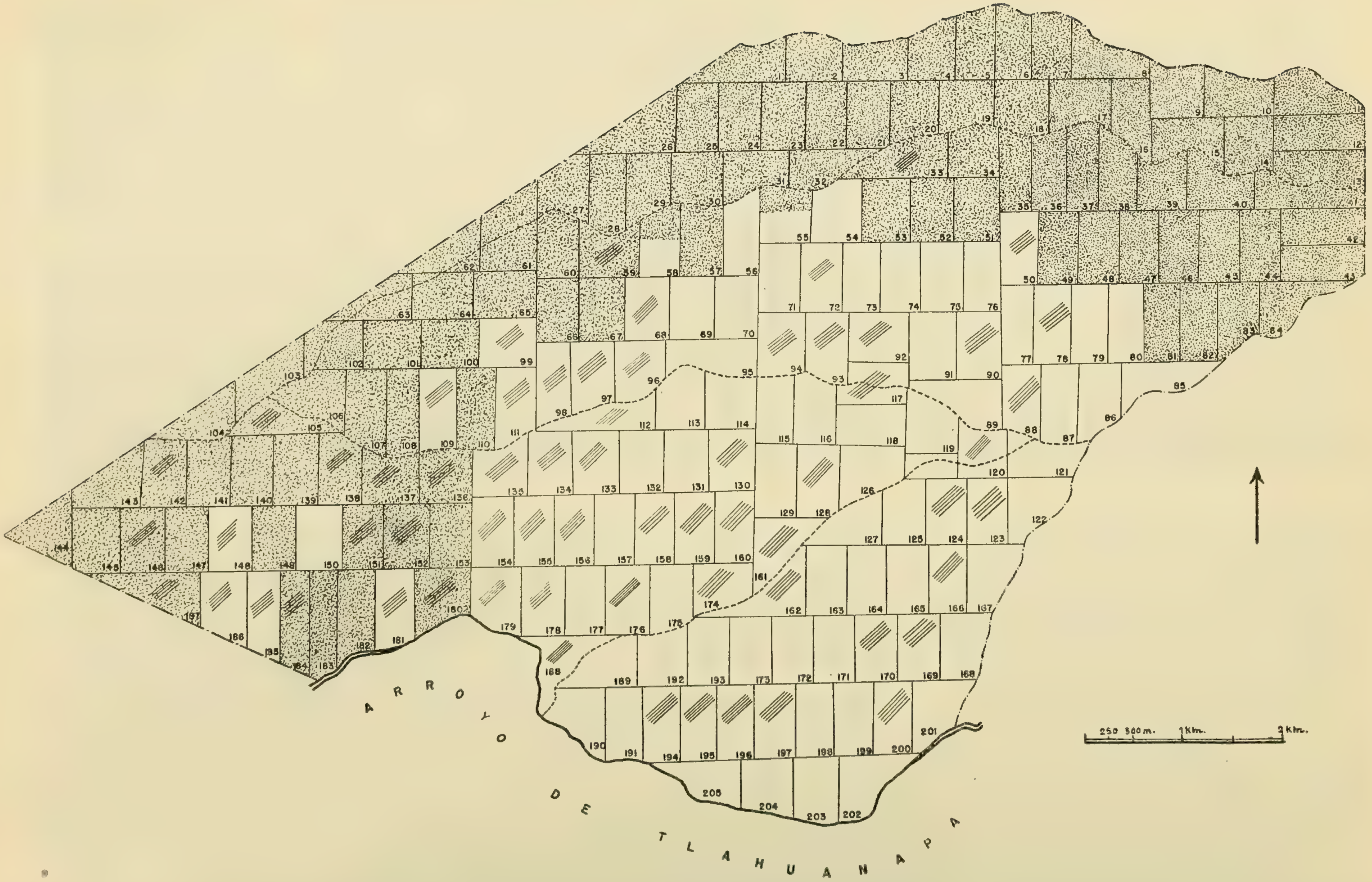
The Totonac are well aware of the danger of losing a clearing to grass, yet this seems not to be a very grave threat in Tajín. When a maize field is abandoned because of weed competition, the blame is not laid on grass. Naturally, if grass sod once becomes established, it is many years before the *monte* is able to regain possession of the plot, and during this long interval the field cannot be exploited. The incursion of grassland is discussed in greater detail in connection with agriculture (p. 114).

The Totonac make fairly extensive use of their plant resources, as will be seen below (pp. 81–84). The fauna, however, is less susceptible to exploitation. There no longer are any game animals worthy of mention in the vicinity of Tajín. Formerly, it is said, when the pyramids were forested, there were deer and peccary; and when *monte alto* still was extensive, jaguars were common. But these days are long since past, and of game animals, even a lone rabbit is sufficiently rare to cause excitement.

Birds are plentiful and many are recognized by the Totonac; a partial list, with some suggested identifications, will be found in Appendix D. Snakes, both abundant and varied, include the *coralillo*, the *mazacuate*, and the *cuatro narices*. Although various of our acquaintances have suffered from snake bite, we know of only one fatality. Also venomous, but never fatal, is the sting of the scorpion (*alacrán*); the latter is plentiful, especially in the thatched roofs.

Of insect pests, some providentially are wanting, others depressingly abundant. Strangely enough, flies are rare. Mosquitoes are found only in certain parts of Tajín, generally near springs, where they are both a nuisance and a menace, because of malaria. Fleas are said to abound during Holy Week. At this time, the *laurel* (Appendix C, No. 130) blossoms, and since it is believed to breed fleas, it is held directly responsible. Bedbugs are unknown. Head lice are not infrequent, especially among children, and during our stay, occasioned a bitter spat between parents and the local school teacher. What apparently is an infinitesimal form of chicken louse (*coruco*, mát¢aiyaˀ) sometimes is troublesome, especially to children. Fowl ordinarily have the run of the house, and the latter becomes infested unless well swept. Since many Totonac sleep on palm mats spread on the earth floor, the lice thus have access to them, and from the bites unpleasant sores may result.

The repertoire of pests also includes ticks, both large (*garrapata*, ištakálan, lanqaškapa) and small (*pinolillo*, lak‘suškapa), which rain upon one as he passes along the narrow forest trails, particularly in the spring. If not removed promptly, they cause tremendous discomfort. So also do almost invisible red insect pests known as *aradores* (skatínat). They attack children and adults alike; they also infest baby chicks, sometimes causing death.



MAP 6.—Stands of virgin forest in Tajín.

Land divisions are explained in detail in the text (pp. 54–58). Stippled areas lie outside Tajín and have been largely ignored by our informants, Modesto González and Donato Santes. Diagonal hatch indicates virgin forest, regardless of extent. Except for three nearly intact plots (Nos. 178, 179, 186), on the southwestern fringes of Tajín, all stands are inconsequential commercially.

The itching is severe, and children, scratching with grubby hands, often turn *aradores* into nasty sores. Ants crawl over the youngsters who sleep on the floor and feed on the sores. The end result is not attractive.

Chiggers (*niguas*, stokono) occur in quantity about houses where swine have been kept. Many Totonac go barefoot, and these pests penetrate the feet, especially about the nails. Careful parents inspect their offspring almost daily for ticks, *aradores*, and chiggers; but one lad, whose family gives the matter little attention, is scarcely able to hobble because of chiggers embedded in his feet.

PLACE NAMES

Our impression is that the Tajín Totonac are well adjusted to the local environment and that, in all probability, their residence in this, or nearby terrain, is of long standing. Accordingly, the virtual want of Totonac place names is quite remarkable. The few Totonac names we have been able to record for settlements are listed below; it will be noted that several are derived from trees.

Coxquihui. This is said to be the Totonac name of a wild cane "thicker than *carrizo.*" It does not occur at Tajín, hence no specimen was available for identification.

Escolín. Two small settlements, one in the municipal unit of Papantla and one in Coatzintla, derive their names from a *monte alto* tree, known in Totonac as skolín (Appendix C, No. 338; subsequent numbers in parentheses, following the name of a plant, refer to this same appendix).

Ojital. This community is said to be called kajukšúpun (*lugar de muchos ojites*). The *ojite* (No. 98) is another *monte alto* tree. We suspect that the native term may be a translation from Spanish and not the reverse; in conversation, Ojital generally is called by its Spanish name.

Papantla. Among the Tajín Totonac, Papantla is known merely as katčikín (pueblo; čikiˀ, houses). When speaking Spanish, a Totonac translates literally, calling Papantla, rather grandly, *el pueblo* (the town).

Papantla probably is not a Totonac term (Patiño, p. 15), although a sixteenth-century account says that it was founded by a chief for whom the town was named (Relación de Papantla). One commonly hears (cf. Patiño, p. 15) that when the area was forested, there were many birds known as *papanes* (Appendix D, No. 25) and that as one passed they raised a great clatter. From this, some informants believe that the modern name may be derived.

There is a further suggestion that the name might come from *papán*, an unidentified tree; and two nineteenth-century writers (Bausa, p. 380; Anonymous, p. 105) translate the term as *luna buena* (good moon; the Totonac term for moon is papa).

Tajín. Concerning the origin of this name, there also, are numerous versions. One informant says that a column of smoke, seen from afar, is called jin, in Totonac. When there are several such columns, the name is tajín. Accordingly, a free translation would be "columns of smoke, seen from afar." It is not difficult to account for columns of smoke, because Totonac religious observances apparently included a perpetual fire (Las Casas, p. 461), and hearths are found adjacent to ancient Totonac religious structures (García Payón, 1949 c, p. 647).

A slightly different etymology is suggested by Palerm, who notes that an eighteenth-century document (AGN, No. 5) speaks of "*tierras nombradas Catahín.*" We may assume that "hin" or jin means smoke. Another document (AGN, No. 4) mentions two places, "Catachagni" and "Catapozgatayanque"; and the same document translates these terms respectively as "*lugar aplanado con torta de Cal*" and "*el Rajadero.*" It is possible that "cata" may be a prefix indicating place. Accordingly, the translation of "Catahín" would be "place of smoke." In this case, Tajín might be a modern contraction of Totonac "Catahín."

Moreover, in Totonac legend, 12 old men, known as tajín, live within the ruins of the famous pyramid, and it is they who control the thunder. Some informants would derive the place name from these legendary beings. In any case, the frequently cited translation of *rayo* or *trueno* (Gazeta de México, p. 350) probably is inaccurate.

Talaxca. The little Totonac settlement of this name, north of Papantla, is called after a cultivated tree, taláška (No. 195).

Tlahuanapa. Both the settlement and the arroyo of Tlahuanapa, immediately south of Tajín, are called šakáškan in Totonac; we could obtain no translation.

This exhausts our list of pueblo names, although for several towns in the Sierra de Puebla, Lombardo Toledano (p. 14) gives Totonac equivalents. Krickeberg (p. 160) lists four place names which he thinks possibly of Totonac origin: Achichipec, Altapan, Chintapan, and Taxca. For the first, our informant could suggest only a vague resemblance to sipe (*cerro*, hill); for the second, naktapak (*cerro o montículo*, hill or rise, either natural or artificial); for the third, nothing whatsoever. For the last, he suspects a derivation from taškat‘ (*miel*, honey).

In the Tajín area, the want of Totonac place names is not confined to pueblos. Ordinarily, hills, fields, and other similar spots seem to be equally innocent of names. If one wishes to refer to a certain maize field, he identifies it by the name of the owner or of the planter. This is in marked contrast to western Mexico as a whole, where virtually every field, pasture, and hill, however, insignificant, has its individual name. Three local hills may have native names; others, as far as we could discover, are unnamed, either in Totonac or Mexicano:

From Tajín to Papantla, the trail climbs a sharp grade, known locally as the Cerro de Taracatloco. One informant thinks that the name given "by the old people" was talakáłok, but he is unable to offer a translation. Another maintains that the name is not Totonac; "no hills have Totonac names."

A more reliable case is that of a hill on the trail to Palma Sola, where a long climb is known as neqˀšakánaˀ (neqˀ, *ahí*, there; šakána, *raspa sombrero*, scratch hat, name of an unidentified tree). Formerly, it is said, the tree was plentiful on this hill.

Another hill—which is also an archeological site—near Santa Catarina and La Laja, in the Espinal zone, is said to be known in Totonac as špáyat. The latter is the name of an unidentified vine—one "which stings when one does not see it, but does not sting if observed."

Perhaps because of the preoccupation with the water supply, arroyos receive more attention:

It has been noted above that the Arroyo de Tlahuanapa has a Totonac name, said to be untranslatable. A tributary of it is known as skuyátpuška (skuyát, *lumbre*, fire; puška, *arroyo*). Another small stream is known as šapuškaukuni (puška, *arroyo;* ukún, the *pimienta* tree, No. 30). Still another is called pulqˀmaniápuška (pulqˀmaniá, *hondo*, deep; puška, *arroyo*).

The little stream which runs through the heart of modern Tajín generally is called the Arroyo de Ortiga (nettle arroyo). The Totonac equivalent is said to be šapúškaka (puška, *arroyo;* kájniˀ, *ortiga*, nettle). This, we suspect, is a translation from Spanish to Totonac.

Of other place names, only one remains:

A spot on the trail to Papantla, near a group of houses known as La Finca, is called nekˀsawál (nek, *allí*, there; sáwal, *zapote negro*, No. 125). A *zapote* tree once stood at this point; although it has disappeared, the name endures.

This dearth of names for geographical features evidently does not characterize the Totonac zone of the Sierra, for which there is ample evidence of native place names which were current a couple of centuries ago. The data are contained in a series of documents found by Palerm in the Archivo General de la Nación. Most deal with delimitation of pueblo lands, between 1716 and 1719; at that time, at least, the Sierra Totonac manifestly were well supplied with local place names.[86]

In short, despite the general impression that Totonacapan is innocent of Totonac place names (Krickeberg, p. 30), it is evident that as late as the eighteenth century, the Sierra Totonac had an abundance of native terms for geographical features. Moreover, it is said that Totonac names exist today for most of the highland pueblos, although the Mexican names are more generally

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[86] In the paragraphs below, the original orthography, both Spanish and Totonac, has been preserved, except for modern pueblo names, whose spelling follows the 1930 census. It will be noted that a number of terms start with "nac," which apparently means *en* (Patiño, p. 31) or "in."

The earliest record dates from 1645 and is contained in a document which treats of differences between Chumatlán and Zozocolco (AGN, No. 4). It mentions, in the vicinity of Jalostoc, an "aroio grande llamado ytacaquian," which is said to mean *"en los límites del pueblo."*

The records for 1716 are extensive and are contained in a series of documents which describe the litigations between Ixtepec and Tapayula on the one hand and Atlequizayan on the other (AGN, No. 2). Place names are abundant and for some a Spanish translation is given.

Boundary between Coatepec and Tapayula: Nactagxgt, Nacmachana, sinsoyuco, Nacxaca, Nacpoxní, Yslogotnohogo, Nacmaxnatalpan.

Between Camocuautla and Tapayula: Nacxaquín, cacíxtama yxuhuaní, Nalcxui nataxgoit.

Boundaries of San Miguel, a subject of Xonacatla: tonco, pau, littlín.

Those of San Bartolomé, a subject of Hueytlalpan: majchanac, maxnitalpan, Taxcon (*"nombre de un parage"*), Tamax guaxní, acoxquí, xasquín. In this same connection, the document mentions a river, which in "their language" is called "La paxtoca."

Boundaries of Ixtepec: *"el parage nombrado* laguextog," Yxlipachococantzcan, Guetzgaya, Cahalan.

Boundary between Ixtepec, Atlequizayan, and Xonacatla: Nacxaca, Cashuacan, Nacatzan, o Pau [*sic*], Axcon, Naclítzin, Nacpolcoyat, Nacqueltíhuaxni, Nacthoncoat.

The limits of "San Francisco Tapaiula" [Tapayula], which bounds San Bartolomé, are said to be as follows: Nagchanalí, Naczpatan, Nacchajalaga, Nactoquiguichic.

Those of "San Pedro Comaquautla" [Camocuautla] are: Nacagsaguacxcan, Naccaguitlan, Nacshpauh, Nacagchogotno.

Now comes a long series of names of landmarks separating "San Sebastian Tostla" [Tuxtla] from various settlements. The document states specifically that the names are Totonac and gives, in most cases, the Spanish translation, which appears below in parentheses.

With the barrio of San Martín: Tonco (*Luzero*), Nacmosínc (*Cueba*), Tangana (*el Sumidero*), quintzí (*el palo duro*), Nacxípot (*el plumero*).

With the barrio of La Concepción: Nacpixaía (*queso delgado*), Xoqúilo gua (*culebra de benado*).

With Atlequizayan: Naclarax (*el Naranjal*), Guesgalla (*entre dos Serros*), Atan (*el palo duro*), Nactlitlin (*el cantadero*).

With Xonacatla: Nacalpatag (*cabeza de chachaluca*), Sachoncal (*el espantajo*), Mosínchochot (*cueba de agua*) [*sic;* see below], Coneapan (*criatura de agua*).

With "San Francisco Casguacan" [Caxhuacán]: Mosínchochot (*Aguila de Cal*) [*sic*], cococ (*el Arenal*).

With the barrio of Huehuetla: Nalal poloc (*serro abujereado*). Nacliguextoc (*donde se encuentran dos arroyos*).

With Hueytlalpan: Nactolon (*piedra parada*), Nacsaxan [no translation], Naccahalan (*donde suenan las piedras*), Nacixlipazgonchon (*calentadero de sopilotes*).

With Xonacatla: Galnaxipit (*serro de cacalotes*), Acpoí (*donde sosiega el aire*).

Additional boundary of Tuxtla: Nacíxlipachochocacac (*nido de concjos*).

The same series of documents includes one, dated, however, 1718, which gives the landmarks separating Ixtepec and Hueytlalpan: tzangana, xípot, Pixaía, Alpalcot, Alaxos, Caxcaya, littlin, zgata chochot. However, for certain points along this boundary, very touching Spanish translations are given: lamacoxomíxit (*Paz*), Matalahlot (*Amistad*), Cacztahuíslat (*quietud*), tahaxni (*descanso*), ztactayat (*escarmiento*), tacaechit (*felici-*

used (Lombardo Toledano, p. 14). Palerm, who spent several days in the Sierra de Puebla, determined that the three barrios of Eloxochitlán still bear Totonac names: puskan (*lugar llano*); tankan (*abajo*); kijilápan (*en una loma*).

The dearth of native place names in the Tajín area is difficult to explain, since Totonac is widely spoken and since the modern community has been established close to 75 years. Although relatively brief, this period certainly should provide ample time for the development of a local terminology. But the fact remains that with the few exceptions given above, natural features about Tajín seem to be devoid of names—either Totonac, Mexicano, or Spanish.

It is understandable that Mexican pueblo names might have been preserved more readily than the Totonac equivalents,[87] and there is no doubt that throughout Totonacapan, towns generally bear Mexican designations. The explanation lies, we suspect, in an old and somewhat obscure Nahuan element in Totonacapan, which has been discussed previously (pp. 6–7, 19–20, 23–24). We doubt that the preponderance of Mexican pueblo names results from the intimate ties between Totonacapan and Tlaxcala (Waitz, cited by Krickeberg, pp. 30), from the relatively late conquest by the Triple Alliance, or from Spanish evangelization—although all these must have contributed to the use of Mexicano as a lingua franca in Totonacapan.

THE MODERN COMMUNITY

Because of the dense vegetation, a casual visitor to the famous archeological site of Tajín has no inkling that half an hour on foot, south of the main pyramid, there is a cluster of 35 households about an open plaza. This cluster is the heart of the modern Totonac community of Tajín. Here the school is situated and here the political administration is centered. By far the greater part of the people live, however, in scattered houses, in clearings in the *monte*, effectively hidden from those who travel only the principal trails.

Modern Tajín has a relatively brief history. Although we doubt that the entire zone was depopulated with the destruction of the ancient center, about A. D. 1200 (p. 14), there is no proof, as far as we know, that the modern Totonac of that zone are lineal descendants of the builders of the pyramids. As a matter of fact, as will be seen below, the present population has been culled from a wide area about Papantla.

COLONIZATION

Informants do not have a very clear picture of the establishment of the modern community. During the middle of the last century, "few people" lived in the Tajín area. At that time, "the land was not privately owned," and the few Totonac "planted wherever they liked, without asking permission of anyone." The head of one family was Ignacio de la Cruz; another was Miguel Andrés, from the Comalteco area; a third was a woman named Carmen Juárez, who lived with her three nieces. All were Totonac; but a lone man, known merely as Agustín, "when drunk, claimed to be Italian."

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dad), Tagtominat (*Union*), cagllihínat (*esperanza*), tlanlíxpotot (*buen fin*). It is important to note that the document itself indicates that the latter names, with the abstract qualities, were assigned by the Spaniards who made the survey.

For 1719, the litigation between Chumatlán and Zozocolco (AGN, No. 4) provides a large series of place names, some with Spanish translation. At that time, the people of "San Miguel tonatico Sosocolco" [Zozocolco] claimed the lands of "San Francisco Xalostoque" [Jalostoc] and other lands "included under the names and landmarks" as follows:

Boundary with Huehuetla: Xonalhpauh (*Pagua amarga*) [bitter *pagua*, a fruit similar to the avocado].

Boundary with "San Francisco Caxguacan" [Caxhuacán]: Chaxanchihuiz (*seis Piedras*).

Boundary with Jonotla: manta xacanat (*Mollejon de Camote*), tampochihuix (*piedra Undida*), haca (*Sapote*), Yxagpon (*su Cumbre*), laca tlalhuachihuix (*piedra Amarilla*), Polízihu in Velpomacxpata (*Yladero, o Torsedero*), nacca agalucotno (*lugar de Machetes de Yerba*), Zapapachihuíx (*piedra Blanda*).

Further landmarks along the boundaries of Zozocolco are specified as follows: Catachagni (*lugar aplanado con torta de Cal*), Ixpocotnozcatan (*bebedero de sierbos*), Xihuitxanant (*cabello flor, o flor de cabello*), Naccaxcot natíat (*lugar de tierra agria*), Nactapac. [*sic*] xalanc (*lugar de paredes de San Mateo*) [elsewhere in the same document, reference is made to *"paredes viejas de San Mateo"*], Nactacípihquihuí (*lugar de Palo de Seiba*), Naccocat (*lugar de Aguacates*), Agmoxní (*cumbre de monos*), Catapozgatayanque (*el Rajadero*), Chancatquihuí (*Palo de Caña*), huanguax (*Eco, ó adonde Retumba el Eco*), Naccagatiti (*el Carrisal*).

In two suits dated 1738 (Chumatlán vs. Zozocolco and Zozocolco vs. Jonotla; AGN, Nos. 4 and 5 respectively), we find a few more place names. At least one has been mentioned previously. The first document mentions the top of "a hill, which in the Totonac language is called yxacpun, and in Spanish, *su cumbre*." The second also mentions yxacpon and gives the same meaning. It adds *"tierras nombradas Catahín"* and *"un parage que nombran en el Ydioma Totonaco* Lixligní . . ." Incidentally, this second document contains considerable text written in Totonac; copies have been given Dr. Norman McQuown, who is making a study of the Sierra Totonac language.

[87] For example, we know that in Sinaloa native names were suppressed because the Spaniards were accompanied by Mexicans, who translated local terms into their own tongue (Sauer, 1934, p. 6), with the end result that, today, most pueblo names are Mexicano-derived.

In 1876, and attended by considerable bloodshed,[88] the Federal Government opened a great stretch of territory to settlement (p. 45), including not only the present Tajín, but extensive areas to the west, south, and north. This expanse of lowland was divided into *lotes*, equivalent to our subdivisions; and these in turn were divided into parcels (*parcelas*). The *lote* which included modern Tajín was known as Ojital y Potrero.[89]

Government-appointed engineers were sent to survey. They cut narrow openings (*brechas*) through the forest, to serve as property lines, and these still are maintained. Not all the subdivisions had parcels of the same size. Ojital y Potrero consisted of 205 parcels, with few exceptions, each of 31 hectares, 7 ares, 95 square meters. This is a generous amount of land, equivalent roughly to 76.8 acres.

Once the survey was completed, parcels were offered for sale at a hundred pesos apiece, plus the cost of registering the title. Most of the purchasers were Totonac.[90] Some already were living in the area, but many were newcomers, chiefly from other Totonac settlements in the Papantla zone. The provenience of the modern population is discussed in some detail a few pages below.

The original survey provided for a plot of ground destined to become the *fundo legal*, or center of the community, where, in time, the new settlement was to have a plaza, a school, and an administrative building. In Ojital y Potrero, two such centers were set aside, each equivalent in area to half a standard parcel.

One of these plots, the core of the now more or less defunct Ojital, lies on the northwest extreme of the subdivision (in parcel 61, maps 6, 8). There is no level land and the *fundo* is situated on a hill. At present, its residents are confined to one family; the school is closed for want of a teacher; and a building labeled "municipal agency" appears to be abandoned. Ojital has been largely replaced by three new centers, formed elsewhere in the northern and western parts of the subdivision.[91]

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[88] Modesto González gives the following version: "When I was a boy I lived with my mother on land which is a little beyond the parcel [No. 115] which Pablo González now has. But in these days there were no parcels; they had not yet divided the land. Everyone built his house wherever he liked, and he planted wherever he wanted. For that reason, there were many squabbles.

"In those days, there were no authorities in Ojital y Potrero, but there were in Papantla. In Ojital y Potrero—it still was not called Tajín—there were only two *apoderados*. They watched that the people did not cut the sapote trees and that they took the chicle [to Papantla?]. They charged rent for the fields and the houses; I think they delivered the money to the treasury in Papantla.

"Then engineers arrived and they began to put signs with numbers along the trails; they said they were going to divide the land. Some people were not agreeable. Here, yes—but those of Polutla, of Poza Larga, and of other places, did not want the land divided. So they 'pronounced' (*se pronunciaron*).

"There were many who rebelled. The chief of all was a *ranchero* named Silva. He and his men fought with Federal troops. On one occasion they even entered Papantla, when the troops were elsewhere.

"The people in Tajín were afraid. The Federal troops took the men to fight against the rebels. Only the old men, and the women, and the children were left. Nobody wanted to sleep in his house; at night, the people gathered and went to the *monte* to sleep.

"The political chief (*jefe politico*) in Papantla gave the rebels to understand that he wanted to arrange difficulties. They talked, and it appeared that they were to settle a truce. So the rebels made a fiesta to celebrate the end of hostilities, and they invited the political chief. He attended, but with soldiers. Then the political chief arranged another celebration in Papantla, and he invited the rebels. Silva went—he was the very chief of the *rancheros*. But they detained him and killed him.

"With this, the rebels lost much strength. They had to retire to the *monte*, where they assaulted people and hid from the troops. Then their ammunition gave out and they were being killed. Whenever the soldiers found a rebel they killed him. To escape, they disguised themselves as women and they mixed with the women. But the soldiers touched the bodies of all [the Totonac] until they detected a man; then they killed him.

"At last, the rebels said they would deliver themselves voluntarily, if they were not killed. So it was. They were sent to serve the Government 5 years in a battalion, far from here. Those who did not deliver themselves were killed, one after another.

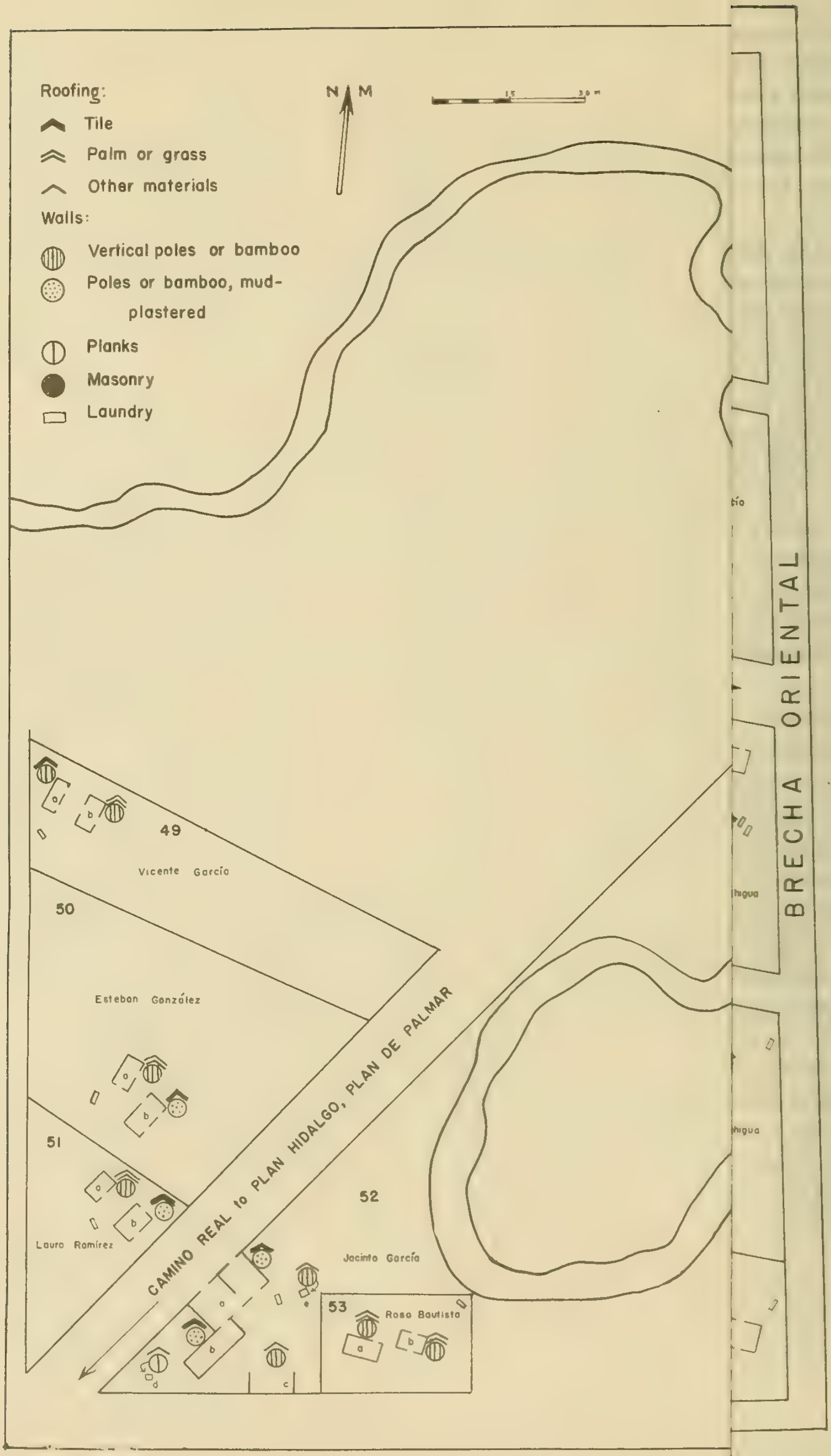
"So they divided the land in parcels. Not only in Ojital y Potrero, but also in lands which now belong to Tlahuanapa. Then came the authorities: a *sub-regidor*, a *teniente de justicia*, and a *ministro de conservación*, with four assistants. The first had the functions of the *agente* of today; the second, of the *juez auxiliar*. And the *ministro* and his helpers were like a corps of police."

[89] *Potrero* means field or pasture. Our guess would be that the name was applied because of a small stretch of level land south of the archeological site. However, Modesto González thinks the name was given because of a nearby plot of grassland, known as the *sabana*.

[90] Problems did not terminate, once the Totonac had legal title to the land, for there seems to have been a large-scale embezzlement shortly thereafter. Uncertain what to do with their newly acquired titles, many delivered them for safekeeping to a certain Simón Tiburcio, an army officer "of great confidence." He promptly sold the titles to one Pedro Tremari, of Papantla; and he, in turn, sold them to "the oil company" (Aguila?). Many of the Totonac thus lost their lands. As punishment, Tiburcio is said to have been "sent to the battalion"; he remained 5 years in the army, then returned "more important then ever. He now was a colonel. He had good luck until his death."

Apparently this same embezzlement extended far west, to the lands of Palma Sola. Documents concerning the land problems of this latter Totonac community are said to be filed in the archives of the Suprema Corte de Justicia, in Mexico City. We have not had opportunity to consult them, but it is possible that these records contain information concerning the lands of Ojital y Potrero.

[91] These are San Antonio, immediately north of Tajín, established about 1933; and La Lagunilla and Ranchería, farther west. The latter were in the process of being formed during our stay in Tajín, in 1947 and 1948.


Roofing:
Tile
Palm or grass
Other materials
Walls:
Vertical poles or bamboo
Poles or bamboo, mud-plastered
Planks
Masonry
Laundry
N
M
15
30 m
BRECHA ORIENTAL
CAMINO REAL to PLAN HIDALGO, PLAN DE PALMAR
49
Vicente García
50
Esteban González
51
Laura Ramírez
52
Jacinto García
53
Rosa Bautista
a
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ace p. 55

In the course of the years—we do not know just when—Potrero came to be known as Tajín. Unlike Ojital, Tajín still is a single community and has not been split into small local centers. Despite the shift in name, the location of the *fundo legal* is unchanged. It lies toward the eastern limits of the subdivision (between parcels 119 and 124, maps 6, 8) and will be described a few pages below.

BOUNDARIES

The external boundaries of Ojital y Potrero are definitive and well known. The subdivision occupies the northwestern limits of the municipal unit administered from Papantla. Immediately to the east, is Papantla itself, largely mestizo, but with a heavy Totonac ingredient. On all sides, save the north and northwest, are other Totonac communities which fall within the jurisdiction of Papantla—El Chote, Morgadal, Tlahuanapa, Gildardo Muñoz, and Plan de Hidalgo. To the north and northwest are further Totonac communities, but these are administered from the municipal seat of Coatzintla.

In contrast, the internal dividing line between Ojital and Tajín (old Potrero) is ragged and subject to constant flux, although informants generally are able to say, without hesitation, whether a certain parcel of land belongs to Tajín or to one of the Ojital centers. Affiliation seems to depend only in part on the location of the land, and in the majority of cases, the real determining factor appears to be in which community the owner of the parcel gives his 1 day a week of free public labor. For example, parcel No. 148 is occupied and planted exclusively by families who give service in Ojital. Nevertheless, the owner, who lives in another parcel, belongs to Tajín, as does the land which is registered in his name.

Occasionally the situation is obscure, and we have followed the verdict of informants, although we were unable to determine the precise reason for the affiliation of the land in question. For example, parcel No. 123, adjoining the *fundo*, is owned by a resident of Tlahuanapa. He does not participate in communal labor in Tajín, yet the land is considered the domain of the latter community. Furthermore, the owners of parcels No. 80 and No. 86 give service in Ojital (San Antonio), yet three informants state flatly that, regardless, the lands belong to Tajín. Conversely, the owner of parcel No. 82 gives communal labor in Tajín, yet the land is said to belong to Ojital.

In some of these cases, it may be that affiliation follows that of a previous owner. A number of Tajín parcels have been acquired by outsiders, who are not Totonac, not local residents, and who give no communal labor. Under such circumstances, informants attribute the parcel to the community where the previous owner rendered public service. Occasionally a parcel has been divided, and the owner of one half gives communal labor in Tajín the owner of the other half, in Ojital. In that event, only half the parcel is claimed by Tajín (maps 6, 8, Nos. 55, 58).

Men who live near the *fundo legal* of Tajín naturally find it more convenient to give public labor there. But if the dwelling is close to Ojital, the owner may change his affiliation according to whim. He merely informs the municipal offices that, until further notice, he will devote his services to a specified one of the Ojital centers—and without further ado, his name is changed officially from one roll to the other. Seldom is there any discussion; "the municipal agents are not exacting."

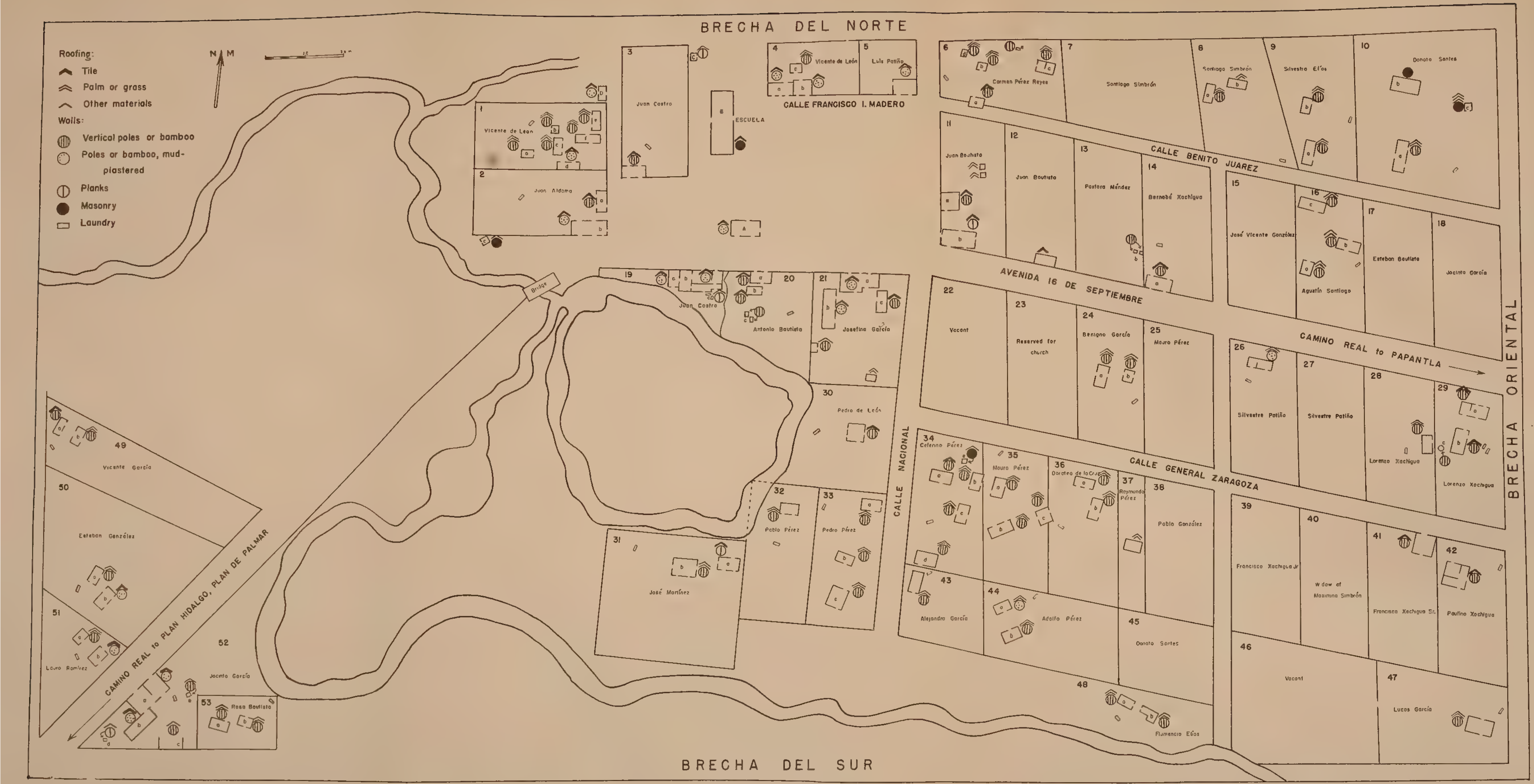
There are two principal reasons for changing from one community to another. Perhaps a man becomes annoyed with the municipal authorities and so decides to give his day of free labor elsewhere.

Or the local program of public works may be ambitious and threaten considerable demand on time and even on purse. In this case, it is expedient to shift allegiance. For example, several men in Tajín were not in sympathy with the new school project. To avoid responsibilty, they withdrew their services from Tajín and transferred to one of the Ojital centers. However, after a few years, as the building neared completion, most returned to Tajín, so that their children might have the right to attend the new school.

From time to time, special cases arise. There is that of a literate man who transferred from Tajín to La Lagunilla, when that newly formed Ojital nucleus was badly in need of a secretary and requested his services.

Although the Totonac are free to change the scene of their communal labor and do so from time to time, they may change only within the limits of the main subdivision—that is, within the confines of Ojital y Potrero. For example, a resident of Tajín is not accepted for communal labor in Tlahuanapa or Gildardo Muñoz, since these settlements lie outside the bounds of Ojital y Potrero.

The current limits of Tajín, unstable and ragged though they be, are shown in maps 6 and 8. The



MAP 7.—The *fundo legal* of Tajín.

(For legend, see pp. 56–57.)

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In contrast, the internal dividing line between Ojital and Tajín (old Potrero) is ragged and subject to constant flux, although informants generally are able to say, without hesitation, whether a certain parcel of land belongs to Tajín or to one of the Ojital centers. Affiliation seems to depend only in part on the location of the land, and in the majority of cases, the real determining factor appears to be in which community the owner of the parcel gives his 1 day a week of free public labor. For example, parcel No. 148 is occupied and planted exclusively by families who give service in Ojital. Nevertheless, the owner, who lives in another parcel, belongs to Tajín, as does the land which is registered in his name.

Occasionally the situation is obscure, and we have followed the verdict of informants, although we were unable to determine the precise reason for the affiliation of the land in question. For example, parcel No. 123, adjoining the *fundo*, is owned by a resident of Tlahuanapa. He does not participate in communal labor in Tajín, yet the land is considered the domain of the latter community. Furthermore, the owners of parcels No. 80 and No. 86 give service in Ojital (San Antonio), yet three informants state flatly that, regardless, the lands belong to Tajín. Conversely, the owner of parcel No. 82 gives communal labor in Tajín, yet the land is said to belong to Ojital.

In some of these cases, it may be that affiliation follows that of a previous owner. A number of Tajín parcels have been acquired by outsiders, who are not Totonac, not local residents, and who give no communal labor. Under such circumstances, informants attribute the parcel to the community where the previous owner rendered public service. Occasionally a parcel has been divided, and the owner of one half gives communal labor in Tajín the owner of the other half, in Ojital. In that event, only half the parcel is claimed by Tajín (maps 6, 8, Nos. 55, 58).

Men who live near the *fundo legal* of Tajín naturally find it more convenient to give public labor there. But if the dwelling is close to Ojital, the owner may change his affiliation according to whim. He merely informs the municipal offices that, until further notice, he will devote his services to a specified one of the Ojital centers—and without further ado, his name is changed officially from one roll to the other. Seldom is there any discussion; "the municipal agents are not exacting."

There are two principal reasons for changing from one community to another. Perhaps a man becomes annoyed with the municipal authorities and so decides to give his day of free labor elsewhere.

Or the local program of public works may be ambitious and threaten considerable demand on time and even on purse. In this case, it is expedient to shift allegiance. For example, several men in Tajín were not in sympathy with the new school project. To avoid responsibilty, they withdrew their services from Tajín and transferred to one of the Ojital centers. However, after a few years, as the building neared completion, most returned to Tajín, so that their children might have the right to attend the new school.

From time to time, special cases arise. There is that of a literate man who transferred from Tajín to La Lagunilla, when that newly formed Ojital nucleus was badly in need of a secretary and requested his services.

Although the Totonac are free to change the scene of their communal labor and do so from time to time, they may change only within the limits of the main subdivision—that is, within the confines of Ojital y Potrero. For example, a resident of Tajín is not accepted for communal labor in Tlahuanapa or Gildardo Muñoz, since these settlements lie outside the bounds of Ojital y Potrero.

The current limits of Tajín, unstable and ragged though they be, are shown in maps 6 and 8. The boundary has been determined through systematic checking, parcel by parcel, with several informants, and the official list of those who render public service in Tajín has also been consulted. The resulting boundary represents public opinion rather than official demarcation; but there is no necessity for more formal or more rigid limits. Public labor—on which land affiliation within the Ojital y Potrero subdivision seems chiefly to rest—is an essentially local matter and interests the Papantla authorities only when the repair of the main trails to Papantla is involved.

THE FUNDO LEGAL

The *fundo legal* of Tajín occupies a relatively level stretch of land, traversed by a meandering arroyo (map 7). Land immediately west of the stream is a couple of meters lower than is that to

Legend to map 7

The *fundo legal* of Tajín. Explanatory data are given below, in tabular form. Unfortunately, with respect to the number of roof sheds, the entries are ambiguous. In the text (p. 178), the ordinary dwelling of native type is described as having two long and two short sheds; but below, the same building is entered as of two sheds. Accordingly, the legend makes no distinction between structures, such as granaries and hog shelters, often actually of two sheds, and dwellings, which almost invariably have two long and two short sheds.

Moreover, in the entries below, a house of three sheds may be one of two things: a thatched roof dwelling (actually of two long and two short sheds), with a lean-to addition; or a tiled roof house, of two sheds, likewise with lean-to. The new masonry school is described as of four sheds; other such entries refer exclusively to hipped roof buildings, with tile covering.

The ambiguity outlined above was noticed after our return from the field; without being able to inspect each structure anew, we are reluctant to attempt a detailed correction, building by building.

Key No., map 7	Owner	Walls				Roof					Floor		Doors			Use; other observations
		Poles or bamboo														
		Plain	Mud-plastered	Plank	Masonry	Number of sheds	Tile	Palm	Grass	Other material	Earth	Clay or cement tile	Bamboo	Plank, metal hinges	Other forms	
A	Public building		×			2	×					×		×		Storage, granary, jail.
B	do				×	4	×					×		×		School.
C	do			×		1				×	×				×	School outhouse.
D	do		×			2	×				×			×		Teacher's dwelling.
1 a	Vicente de León	×				2		×			×		×			Bedroom, granary.
b	do	×				2		×			×		×			Do.
c	do	×				2		×			×		×			Bedroom, living room.
d	do		×			2	×					×		×		Do.
e	do	×				2		×			×		×			Bedroom, kitchen.
f	do	×				2		×			×		×			Do.
2 a	Juan Aldana	×				2	×				×			×		Do.
b	do		×			4	×					×		×		Part rented as municipal office; living room, granary.
c	do				×	1				×	×					Sweathouse.
	Juan Castro	×				2	×				×			×		Store, dwelling; occupied by Nemesio Martínez.
4 a	Vicente de León		×			3	×				×			×		Store.
b	do		×			2	×				×			×		Dwelling, oven.
c	do	×				2		×	×		×			×		Bedroom, granary.
5	Luis Patiño	×	×[1]			2	×				×			×		Dwelling; occupied by Papantla carpenter.
6 a	Carmen Pérez Reyes	×				2	×				×		×			Abandoned.
b	do	×				2		×			×		×			Bedroom, kitchen.
c	do	×				2		×			×		×			Bedroom, living room, granary.
d	do	×				2		×			×				×	Hog shelter.
e	do	×									×				×	Fowl pen.
7	Santiago Simbrón															Lot planted to maize by Manuel de la Luz.
8 a	do	×				2		×			×		×			Dwelling, granary; occupied by Manuel de la Luz.
b	do					2		×			×					Not in use.
9 a	Silvestra Elías	×				2		×			×			×		Storage, granary; occupied by Francisco Morales.
b	do	×				2		×			×		×			Dwelling; occupied by Julián García.
10 a	Donato Santes	×				2		×	×		×		×			Bedroom, living room, kitchen; occupied by Francisco Morales.
b	do				×	2	×				×					Unfinished; in ruins.
c	do				×	2				×	×					Sweathouse; used by Francisco Morales.
11 a	Juan Bautista	×		×		2	×				×			×		Bedroom, kitchen, granary.
b	do			×		4	×					×		×		Living room.
c	do					2		×			×					Storage shelter; no walls.
12	do					2	×				×					Unfinished house.
13	Pastora Méndez															Lot grown to *monte*.
14 a	Bernabé Xochigua	×				2	×				×			×		Dwelling, granary.
b	do	×									×					Fowl pens, on adjacent lot.

[1] Interior, mud-plastered; exterior, plaster confined to one corner of building.

Legend to map 7—Continued

Key No., map 7		Owner	Walls				Roof					Floor		Doors			Use; other observations
			Poles or bamboo														
			Plain	Mud-plastered	Plank	Masonry	Number of sheds	Tile	Palm	Grass	Other material	Earth	Clay or cement tile	Bamboo	Plank, metal hinges	Other forms	
15		José Vicente González															Lot grown to *monte*.
16	a	Agustín Santiago	×				2		×			×		×			Bedroom, granary.
	b	do	×				2		×			×		×			Bedroom, living room.
	c	do	×				2		×			×		×			Bedroom, kitchen.
17		Esteban Bautista															Lot grown to *monte*.
18		Jacinto García															Do.
19	a	Juan Castro		×			2	×				×			×		Storage, oven.
	b	do		×			2	×				×			×		Store, dwelling.
	c	do			×		1				×	×				×	Outhouse.
20	a	Antonio Bautista	×				2	×				×			×		Bedroom, living room, granary.
	b	do	×				2	×				×			×		Kitchen.
	c	do	×									×					Fowl pen.
21	a	Josefina García		×			2	×				×	×		×		Store, bedroom.
	b	do		×			2	×				×			×		Storage.
	c	do		×			2	×				×			×		Bedroom, kitchen.
	d	do					2		×								Corral.
	e	do	×				1				×	×				×	Outhouse.
22		Vacant															Lot grown to *monte*.
23		do															Lot grown to *monte*; reserved for future chapel.
24	a	Benigno García	×				2		×			×		×			Bedroom, living room, granary; occupied by Feliciana de León.
	b	do	×				2		×			×		×			Bedroom, kitchen; occupied by Feliciana de León.
25		Mauro Pérez															Lot grown to *monte*.
26		Silvestre Patiño	×	[2]×			2		×	×		×		×			Unoccupied.
27		do															Lot grown to *monte*.
28		Lorenzo Xochigua	×				3		×		×	×		×			Dwelling, formerly hog shelter; occupied by Modesto González.
29	a	do	×				4	×				×			×		Bedroom, living room.
	b	do	×	[3]×			3	×				×		×			Bedroom, kitchen.
	c	do	×									×					Fowl pen.
30		Pedro de León	×				2	×				×			×		Dwelling, granary.
31	a	José Martínez			×		2	×				×			×		Bedroom, living room, granary.
	b	do	×				2		×			×		×			Bedroom, kitchen.
32		Pablo Pérez	×				2		×			×		×			Dwelling, granary.
33	a	Pedro Pérez	×				2		×			×		×			Bedroom, kitchen.
	b	do	×				2		×			×		×			Do.
	c	do	×				2		×			×		×			Bedroom, living room, granary.
34	a	Ceferino Pérez	×				2	×				×			×		Bedroom, living room.
	b	do	×				2		×			×		×			Bedroom, kitchen.
	c	do	×				2		×			×		×			Bedroom, living room.
	d	do	×				2		×			×		×			Bedroom, living room, granary; occupied by Alejandro García.
	e	do				×	1				×	×					Sweathouse.
	f	do	×				2		×			×					Granary.
	g	do	×				2		×			×					Hog shelter.
35	a	Mauro Pérez	×				2		×			×		×			Bedroom, kitchen.
	b	do	×				2		×			×		×			Bedroom, living room, granary.
	c	do	×				2		×			×		×			Dwelling; occupied by Dorotea de la Cruz.
36	a	Dorotea de la Cruz	×				2		×			×		×			Bedroom, kitchen; occupied by Alberto Martínez.
	b	do	×				2		×			×		×			Bedroom, living room, granary; occupied by Alberto Martínez.
37		Raymundo Pérez					2		×								Roofed shelter without walls; not in use.
38		Pablo González															Lot grown to *monte*.
39		Francisco Xochigua, Jr.															Do.
40		Widow of Maximino Simbrón															Do.
41		Francisco Xochigua	×				4	×				×		×	×		Granary; rented to agricultural cooperative.
42		Paulino Xochigua	×				3					×		×	×		Dwelling, granary.
43		Alejandro García	×				2		×			×		×			Bedroom, kitchen.
44	a	Adolfo Pérez	×	[4]×			2		×			×		×			Bedroom, living room, granary.
	b	do	×				2		×			×		×			Bedroom, kitchen.
45		Donato Santes															Lot grown to *monte*.
46		Vacant															Do.
47		Lucas García	×				2		×			×		×			Abandoned.
48	a	Flumencio Elías	×				2		×			×		×			Bedroom, living room, granary.
	b	do	×				2		×			×		×			Bedroom, kitchen.
49	a	Vicente García	×				2	×				×			×		Bedroom, living room, granary.
	b	do	×				2		×			×		×			Bedroom, kitchen.
50	a	Esteban González	×				2		×			×		×			Do.
	b	do		×			2	×				×			×		Bedroom, living room, granary.
51	a	Lauro Ramírez	×				2		×			×		×			Bedroom, kitchen, granary.
	b	do		×			3	×				×			×		Bedroom, living room.
52	a	Jacinto García		×	[5]×		2	×				×	×		×		Store, storage.
	b	do		×	[5]×		1	×				×			×		Bedroom, kitchen.
	c	do	×				1				×	×		×			Corral.
	d	do			×		1				×	×			×		Outhouse.
	e	do	×				1				×	×		×			Hog shelter.
53	a	Rosa Bautista	×				2		×			×		×			Bedroom, living room.
	b	do	×				2		×			×		×			Bedroom, kitchen.

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[2] North wall mud-plastered on interior; other walls not plastered.
[3] Plaster confined to interior, at northeast and northwest corners of building.
[4] Incompletely plastered.
[5] Walls in part plank construction; in part, poles-bamboo, mud-plastered.

the east and is of limited utility, since it is subject to flooding. However, it is kept cleared and occasionally serves as a baseball field; or school children march there in honor of some official holiday. Downstream, along the arroyo and including the island enclosed by an ox bow (map 7) is a strip of land which likewise is not generally exploited, since the stream occasionally makes minor changes in course.

The plaza lies toward the northern limits of the *fundo*, surrounded by the equivalent of city lots (*solares*), each approximately 25 × 50 m. Although the *fundo* was set aside in the course of the 1876 survey, lots were not laid out until many years later. One informant thinks that lots were measured and thoroughfares cleared as early as 1910 or 1911; others date this undertaking as about 1926. In any case, actual settlement of the *solares* was not general until 1928.

Lots were sold at $25.00 apiece and titles registered in Papantla. Most of the lots now are privately owned. Reputedly by Federal order, in 1945 or 1946, the granting of new titles to public lands was discontinued, and at present, several families live on *solares* which still, officially, are public domain. The occupants have registered in Papantla and, strangely enough, pay taxes on this land, to which they do not have title, with the understanding that when the Federal ruling is altered, they will have first chance at purchase. On map 7, they appear as owners of the land.

At the specific request of local authorities, our map of the *fundo legal* is somewhat idealized. Individual lots, or *solares*, are fairly well defined by a series of substantial posts of resistant wood. But the streets are far less obvious than the sketch indicates. The so-called Avenida 16 de septiembre (pls. 3, *a;* 9, *f*) is kept cleared at all times, through communal labor. It connects with the main trail to Papantla and continues west, across the *fundo*, to other Totonac communities, such as Plan de Hidalgo and Plan de Palmar. Accordingly, it is a main artery. The Calle Nacional likewise is a main thoroughfare (pl. 3, *c*), at least north of the plaza. It adjoins another branch of the main Papantla trail and runs north to the archeological site. Other streets are far less conspicuous and are little more than narrow, overgrown trails. The Calle General Zaragoza, for example, was scarcely discernible, although its limits were marked by on occasional post. Through communal labor, this "street" was reopened for our benefit, so that it might appear on the map.

The plaza is simply an open plot of ground toward the northern limits of the *fundo.* Weeds are kept cut through communal labor (pl. 3, *b–d*), but there is no pretense at a garden and not even a makeshift equivalent of the kiosk which so often dominates the plaza of towns in Mexico. Except for the plaza proper and for the unoccupied expanse of land to the west and southwest of it, the *fundo* is relatively well wooded. Naturally, every inhabited lot contains a house clearing, but in most a good many trees remain standing, and a certain amount of low *monte* gives privacy.

On the west, the boundary of the plaza is irregular, owing to the intrusion of a *solar* and the school building (pl. 3, *e;* map 7, *B*). The latter, constructed through communal enterprise, is of masonry (ftn. 8, p. 176) and is the pride and joy of Tajín. Toward the southern limits of the plaza, a small, windowless, mud-plastered building (pl. 3, *a*, *d;* map 7, *A*) sits in isolated dignity. It formerly functioned as the municipal office, but now is relegated to use as a jail and for storage, and the local government holds forth in rented quarters (map 7, lot No. 2, house *b*). Between the old municipal building and the school is a low mound of stones, all that remains of a former chapel.[92]

The *fundo legal* is the closest approximation to an urban center in Tajín. Here settlement is relatively concentrated; here are the school and the municipal office; and here the men present themselves one day a week throughout much of the year, to give free communal labor. Here too are clustered all but two of the little stores which supply the Totonac with "city" merchandise, when they do not go to Papantla for their purchases; and one of the remaining stores is situated on the Calle Nacional, only a few hundred meters north of the limits of the *fundo.* Architecturally, the *fundo* is pretentious, by local standards, and has a higher percentage of mud-plastered buildings, of plank walls, and of tiled roofs than is found in outlying parcels.

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[92] As recent arrivals in Tajín, we asked if there were a church. The answer was regretful: formerly there had been one, but it had fallen in an earthquake, and "we have not had time to rebuild as yet." Upon further inquiry, it turned out that the disaster had transpired "about 30 years ago."

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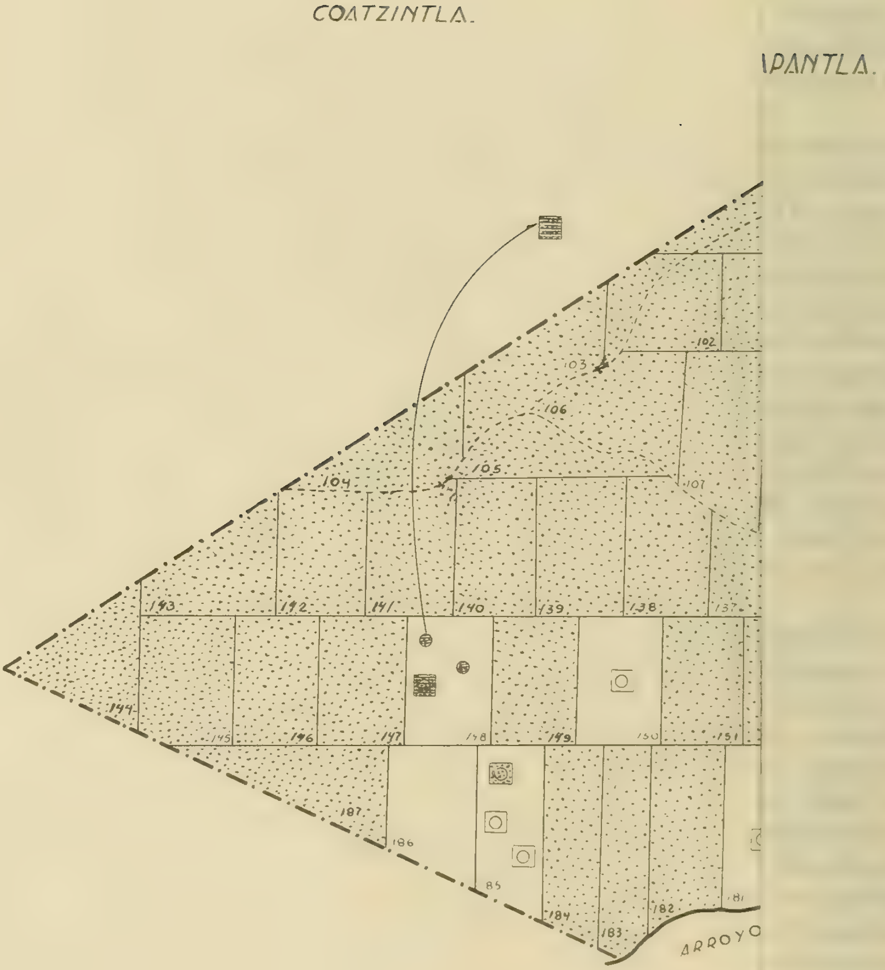

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(Face p. 59)

DISTRIBUTION OF HOUSES AND FIELDS

Less than one-fifth of the total population of Tajín resides in the *fundo legal* which, at the time of our count, had 206 individuals divided among 35 families. The rest live widely scattered on outlying parcels of land, the more remote as much as 3 hours on foot from the *fundo*. These dispersed houses are built in secluded clearings, generally some distance from the main trails and well hidden from them.

A graphic representation of the distribution of dwelling and of fields is given in map 8.[93] It shows the ragged and somewhat shifting boundary between the lands of Tajín and Ojital. It also demonstrates that certain Tajín Totonac plant on lands outside the community—not only within Ojital property, but completely outside the Ojital y Potrero subdivision. Furthermore, it indicates that a few nonresidents plant on Tajín lands. Owing to these complications, the discussion below will be somewhat involved.

The map accounts for a total of 167 households (exclusive of two in Papantla and one in Tlahuanapa, which plant on Tajín lands). For want of space, the houses of the 35 families of the *fundo legal* (map 7) are not entered, but the arrows which radiate from the latter represent families who live in the urban center and who plant on outlying parcels or on lands outside of Tajín. The 35 families of the *fundo* must be added to the 167 households shown on map 8, giving a total of 202. However, of these 202 households, 16 live on Tajín lands but give communal labor in one of the Ojital centers; the Totonac consider, therefore, that they belong to Ojital, not to Tajín. Because of this, these 16 families are not covered by our general census, which includes 186 families.

Map 8 shows a total of 114 parcels of land which either belong to Tajín or which are exploited in part or fully by the Tajín Totonac. This total includes 2 half parcels (map 8, Nos. 55, 58) claimed by Tajín; the remaining halves belong to Ojital, as do six entire parcels, which are planted by Tajín residents. Naturally, some of these are further exploited by residents of Ojital, but this is not indicated on our map. The total of 114 does not include the half dozen plantings which fall outside the bounds of the Ojital y Potrero subdivision. According to use, these 114 parcels may be grouped as follows:

Vacant	[94] 13
Parcels with houses, no plantings	2
Parcels with plantings, no houses	31
Parcels with both houses and plantings	68
Total	114

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[93] Petróleos Mexicanos generously made available a detailed map, inherited from its predecessors, which shows the individual parcels of the Ojital y Potrero subdivision. Thanks to it, the distribution of population and plantings can be shown clearly.

The original map identifies parcels only by number. In part through a study of state tax records—not only incomplete, but often incorrect as to parcel number—and in part through interrogation of informants, each parcel within Tajín has been identified by owner.

[94] We determined why these 13 parcels were not exploited:

Nos. 90, 174. Owned by a non-Totonac Papantla resident, who apparently is holding them to resell at a profit; he refuses to rent No. 174, because it contains *monte alto*.

Nos. 134, 155. Each owner has another parcel closer to the *fundo*, which is handier to plant.

Nos. 167, 204. These have been cleared almost completely within recent years. The first was rented on large scale, and the *monte* must have time to reestablish itself before the land can be further planted. The second was purchased by "a foreigner," who cleared it completely, preparatory to large-scale cane planting. His death interrupted the project, and the land now is in the name of a non-Totonac Papantla resident, who desires to sell. No one is interested in purchasing, because the *monte* will have to grow for several years before it warrants clearing and planting anew.

No. 173. Parcel abandoned by the owner following the murder of his son.

Nos. 178, 179. Cherished because they are largely *monte alto*. The owner has two other parcels adjacent to the *fundo*, sufficient for his immediate needs and those of his sons.

No. 186. Owner likewise owns No. 185 and does not require the adjacent parcel at present.

Nos. 188, 191. Owners have moved to Papantla; their lands not utilized at present.

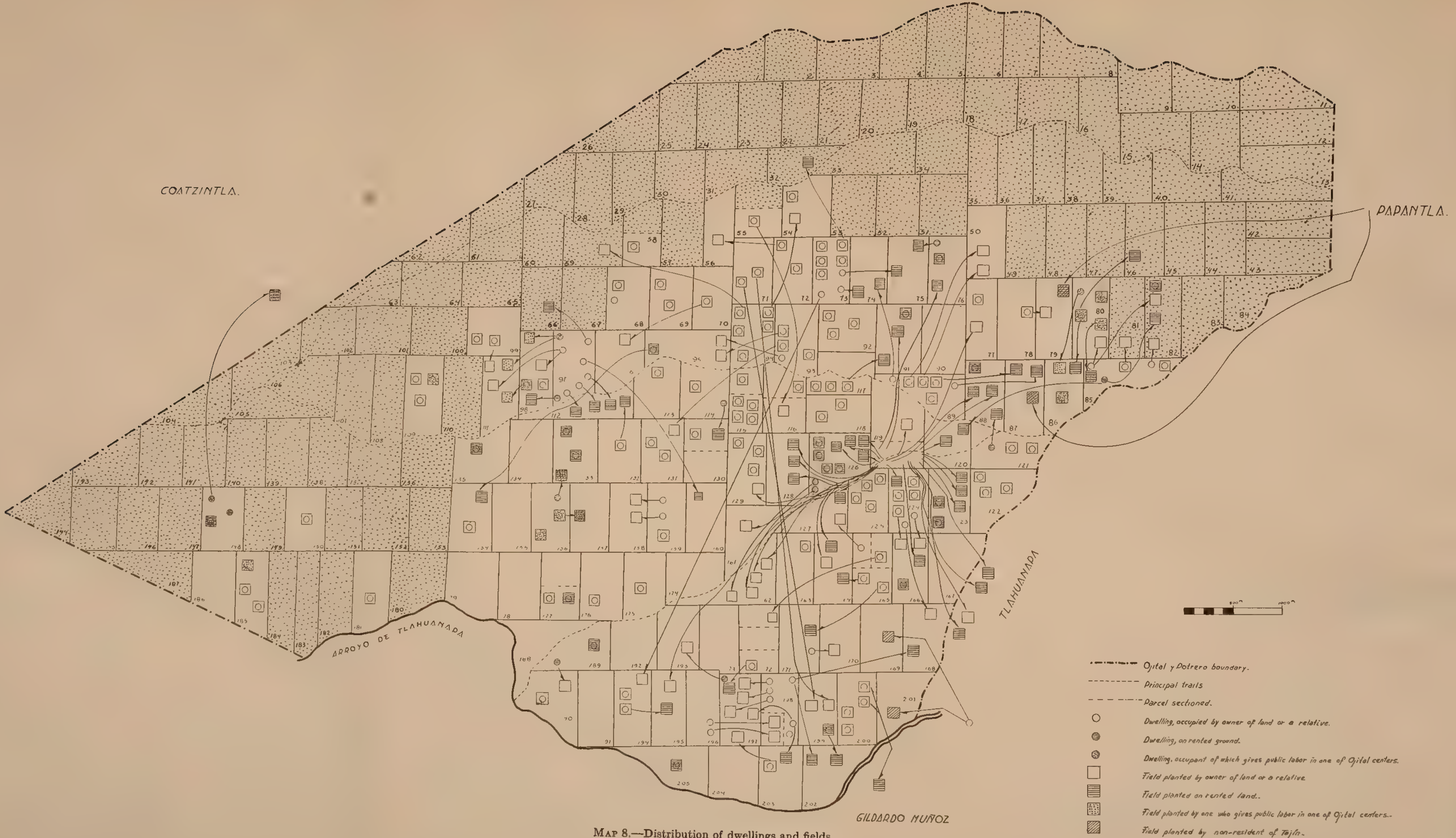
No. 192. Parcel in process of being sold.

Legend to map 8

Distribution of dwellings and fields. Stippled parcels belong to the Ojital centers; the remaining parcels are Tajín lands.

The key to land ownership appears on the map. A square indicates the plantings of a household within a given parcel; *individual* fields are not shown, and several may be represented by a single square. Similarly, a circle represents a household, although the latter may consist of one or of several buildings. No attempt has been made to show the relative position of dwellings and fields within each parcel. If a family lives in one parcel and likewise plants there, the circle is contained within a square (for example, No. 113, whose plantings are exclusively within the parcel where the dwelling is situated). If a family plants outside the parcel, an arrow leads from the domicile to the field or fields. Thus parcel 89 contains six households; one family plants exclusively within this same parcel; three plant both there and elsewhere; and two plant only on other lands.

For want of space, households within the *fundo legal* (see map 7) are not shown, but arrows radiating from it represent families who live in the urban center and plant on outlying lands.


COATZINTLA.
PAPANTLA.
ARROYO DE TLAHUANADA
TLAHUANADA
GILDARDO MUÑOZ
500 m
1000 m
Ojital y Potrero boundary.
Principal trails
Parcel sectioned.
Dwelling, occupied by owner of land or a relative.
Dwelling, on rented ground.
Dwelling, occupant of which gives public labor in one of Ojital centers.
Field planted by owner of land or a relative
Field planted on rented land.
Field planted by one who gives public labor in one of Ojital centers.
Field planted by non-resident of Tajin.

MAP 8.—Distribution of dwellings and fields.

(For legend, see p. 59.)

DISTRIBUTION OF HOUSES AND FIELDS

Less than one-fifth of the total population of Tajín resides in the *fundo legal* which, at the time of our count, had 206 individuals divided among 35 families. The rest live widely scattered on outlying parcels of land, the more remote as much as 3 hours on foot from the *fundo*. These dispersed houses are built in secluded clearings, generally some distance from the main trails and well hidden from them.

A graphic representation of the distribution of dwelling and of fields is given in map 8.[93] It shows the ragged and somewhat shifting boundary between the lands of Tajín and Ojital. It also demonstrates that certain Tajín Totonac plant on lands outside the community—not only within Ojital property, but completely outside the Ojital y Potrero subdivision. Furthermore, it indicates that a few nonresidents plant on Tajín lands. Owing to these complications, the discussion below will be somewhat involved.

The map accounts for a total of 167 households (exclusive of two in Papantla and one in Tlahuanapa, which plant on Tajín lands). For want of space, the houses of the 35 families of the *fundo legal* (map 7) are not entered, but the arrows which radiate from the latter represent families who live in the urban center and who plant on outlying parcels or on lands outside of Tajín. The 35 families of the *fundo* must be added to the 167 households shown on map 8, giving a total of 202. However, of these 202 households, 16 live on Tajín lands but give communal labor in one of the Ojital centers; the Totonac consider, therefore, that they belong to Ojital, not to Tajín. Because of this, these 16 families are not covered by our general census, which includes 186 families.

Map 8 shows a total of 114 parcels of land which either belong to Tajín or which are exploited in part or fully by the Tajín Totonac. This total includes 2 half parcels (map 8, Nos. 55, 58) claimed by Tajín; the remaining halves belong to Ojital, as do six entire parcels, which are planted by Tajín residents. Naturally, some of these are further exploited by residents of Ojital, but this is not indicated on our map. The total of 114 does not include the half dozen plantings which fall outside the bounds of the Ojital y Potrero subdivision. According to use, these 114 parcels may be grouped as follows:

Vacant	[94] 13
Parcels with houses, no plantings	2
Parcels with plantings, no houses	31
Parcels with both houses and plantings	68
Total	114

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[93] Petróleos Mexicanos generously made available a detailed map, inherited from its predecessors, which shows the individual parcels of the Ojital y Potrero subdivision. Thanks to it, the distribution of population and plantings can be shown clearly.

The original map identifies parcels only by number. In part through a study of state tax records—not only incomplete, but often incorrect as to parcel number—and in part through interrogation of informants, each parcel within Tajín has been identified by owner.

[94] We determined why these 13 parcels were not exploited:

Nos. 90, 174. Owned by a non-Totonac Papantla resident, who apparently is holding them to resell at a profit; he refuses to rent No. 174, because it contains *monte alto*.

Nos. 134, 155. Each owner has another parcel closer to the *fundo*, which is handier to plant.

Nos. 167, 204. These have been cleared almost completely within recent years. The first was rented on large scale, and the *monte* must have time to reestablish itself before the land can be further planted. The second was purchased by "a foreigner," who cleared it completely, preparatory to large-scale cane planting. His death interrupted the project, and the land now is in the name of a non-Totonac Papantla resident, who desires to sell. No one is interested in purchasing, because the *monte* will have to grow for several years before it warrants clearing and planting anew.

No. 173. Parcel abandoned by the owner following the murder of his son.

Nos. 178, 179. Cherished because they are largely *monte alto*. The owner has two other parcels adjacent to the *fundo*, sufficient for his immediate needs and those of his sons.

No. 186. Owner likewise owns No. 185 and does not require the adjacent parcel at present.

Nos. 188, 191. Owners have moved to Papantla; their lands not utilized at present.

No. 192. Parcel in process of being sold.

Legend to map 8

Distribution of dwellings and fields. Stippled parcels belong to the Ojital centers; the remaining parcels are Tajín lands.

The key to land ownership appears on the map. A square indicates the plantings of a household within a given parcel; *individual* fields are not shown, and several may be represented by a single square. Similarly, a circle represents a household, although the latter may consist of one or of several buildings. No attempt has been made to show the relative position of dwellings and fields within each parcel. If a family lives in one parcel and likewise plants there, the circle is contained within a square (for example, No. 113, whose plantings are exclusively within the parcel where the dwelling is situated). If a family plants outside the parcel, an arrow leads from the domicile to the field or fields. Thus parcel 89 contains six households; one family plants exclusively within this same parcel; three plant both there and elsewhere; and two plant only on other lands.

For want of space, households within the *fundo legal* (see map 7) are not shown, but arrows radiating from it represent families who live in the urban center and plant on outlying lands.

More than half the parcels contain both houses and fields. Less than a third are planted but not inhabited—accounted for, in part, by families who live in the *fundo* but who plant on outlying parcels. Only two parcels have dwellings but no fields.[95]

In Tajín 167 families live on parcels. Of them, 16 give public labor on Ojital centers; although they have not been included in our census, they should be taken into consideration here, for they live on Tajín lands. Of the total of 114 parcels, 6 are considered part of Ojital, as are halves of 2 others (map 8, Nos. 55, 58). If we deduct these 7 Ojital parcels, we have a total of 107 for Tajín. At this point, our families are reduced to 166, for one Tajín family lives on an Ojital parcel which is eliminated from the count. In short, we have a total of 166 families spread over 107 parcels. Density of dwellings within parcels may be summarized as follows:

Parcels occupied by:	*Number of parcels*	*Number of families*
1 family only	27	27
Do	[1] .5	1
Do	[1] .5	1
2 families	16	32
3 families	10	30
4 families	5	20
5 families	3	15
6 families	4	24
8 families	2	16
Vacant parcels	13	
Parcels with fields, no dwellings	[2] 26	
Total	107	166

[1] Two half parcels, Nos. 55 and 58, of map 8, each occupied by a lone family.

[2] Exclusive of 5 Ojital parcels, with fields but no dwellings.

In other words, 27 of the 107 parcels are occupied by a lone family, and 8 families is the maximum density per parcel. Only two (map 8, Nos. 73, 97) are so heavily peopled, and in neither case is the land sufficient. In one instance, half the families, and in the other, all 8, have fields elsewhere.

Table 4 is based on map 8, together with some supplementary data for the families who live in the *fundo*. In order to have the table intelligible, we must first explain our definition of parcel ownership. In most cases, a parcel is legally in the name of a single individual, often the one who acquired the land in the 1876 subdivision, although, quite naturally, few of the original purchasers still survive. Upon the death of one, the heirs, usually the sons, have continued paying taxes in the name of the deceased, because the official charges for changing the land records are disproportionately high. Under the circumstances, the legal owner may be long since defunct, and the actual owners are his sons or perhaps even his grandsons. Patrilineal inheritance of land is marked and, incidentally, accords well with Totonac preference for patrilocal residence.

TABLE 4.—*Land ownership and utilization*

Parcel ownership or rental	Families resident in		Plantings in	
	Tajín	Elsewhere	Tajín	Else where
Parcel owners:				
a. Live on own parcel; plant exclusively within it	73	0	73	0
b. Live on own parcel; do not plant	2	0	0	0
c. Live on own parcel; plant it and another, likewise own property	18	0	34	[1] 2
d. Live on own parcel: do not plant it, but another or others, likewise own property	18	0	19	[1] 2
e. Live on own parcel; plant it and another, latter rented	13	0	22	[2] 4
f. Live on own parcel; do not plant it, but 2 others, one rented, one own property	1	0	2	0
g. Live on own parcel; plant exclusively on rented parcel or parcels	11	0	11	[1] 1
h. Live on rented parcel· plant own parcel	4	0	4	0
i. Live in *fundo:* plant own parcel	8	0	7	[3] 1
j. Live in *fundo:* plant own parcel and an additional rented one	1	0	2	0
k. Live in Tlahuanapa; plant own parcels in Tajín	0	1	2	0
Subtotal	149	1	176	10
Parcel renters:				
l. Live on rented parcel; plant exclusively within it	18	0	17	[1] 1
m. Live on rented parcel; plant it, as well as another rented parcel	2	0	4	0
n. Live on rented parcel; do not plant it, but another rented parcel or parcels	5	0	5	[1] 1
o. Live on rented parcel; do not plant it or elsewhere	1	0	0	0
p. Live in *fundo:* plant rented parcel or parcels	19	0	18	[3] 3
q. Live on rented parcel; plant in Coatzintla	1	0	0	[4] 1
r. Live in Papantla; plant rented parcel, Tajín	0	2	2	0
Subtotal	46	2	46	6
Neither own nor rent parcels:				
s. Live in *fundo;* do not own or rent parcels; do not plant	7	0	0	0
Total	202	3	222	16
Less families who live in Tajín, but give labor in Ojital centers	16			
	186			

[1] Ojital.

[2] 2, Ojital; 2, Tlahuanapa.

[3] Tlahuanapa.

[4] Coatzintla.

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[95] In one case (No. 97) the family is numerous and the parcel contains eight dwellings; the occupants plant exclusively on their own and on rented lands in adjacent parcels. In the other case (No. 196) the owners have another parcel fragment nearby, which is where they have elected to plant.

Most parcels are exploited by several households related in the male line:[96] by several brothers, by their respective sons, and perhaps by a widow of one of the brothers or sons. These relatives, who might be said to have a moral claim on the lands, have been considered by us as "owners," although the property is not legally in their names. In questionable cases, the criterion has been whether or not they pay rent. If a family is related to the official owner and uses the land free of charge, it appears on map 8 and in table 4 as an owner. If there is no relationship or if it is remote and rent is charged, the family appears among the renters.

For this reason, the total number of owners exceeds the total number of parcels. According to our count, 136 families live on parcels of which they may be considered owners or part owners; only 31 live on lands to which they have no claim, except as renters. These figures include the Totonac families who give communal labor in Ojital centers, some of whom own lands in Tajín. They do not include the 35 families of the *fundo*, because whether or not they own parcels, they do not live on them.

To a certain extent, the Tajín Totonac spill over onto the lands of adjacent communities. One family (map 8, parcel No. 148) plants on lands administered from Coatzintla; another (parcel No. 200) plants in Gildardo Muñoz; several, who live in the *fundo*, use Tlahuanapa lands; and, along the northern and northeastern limits of Tajín, a number of plantings are made on land which belong to various Ojital centers. To a lesser degree, there are intrusions in Tajín. Two individuals of Papantla rent Tajín lands (Nos. 79, 87) for their fields; and one resident of Tlahuanapa plants on two Tajín parcels (Nos. 169, 201) which are, incidentally, his own property.

Our count shows a total of 238 plantings, of which 6 lie outside the limits of Ojital y Potrero. Of the 232 with the subdivision, 158 are on lands owned by the planter; 74 are on rented lands. Forty-three families—roughly one-fourth of the Tajín households—plant on more than one parcel.

Most plant on lands relatively close at hand. Fortunately for the residents of the *fundo*, over half of whom do not own outlying lands, there are several parcels in the immediate environs whose owners are willing to rent on large scale (Nos. 88, 120, 123, and 126). However, one *fundo* dweller travels a very considerable distance to his own land (No. 195) to plant. Perhaps because of the distance, the field is not properly tended; in any case, it is notably not productive.

A few parcel owners have their fields far from their dwellings. Two residents of No. 71 travel practically the full north-south stretch of the community, to plant in No. 199. There they have only vanilla plantings, which require a minimum of care, except as harvest approaches. Parcel No. 73 is overcrowded, and some years ago, one of the owners purchased an additional parcel, No. 194, which is far-removed. His milpa is in the newly purchased parcel, and when the corn requires particular attention, he moves temporarily to No. 194. This is, however, an exception, and maize generally is planted closer home.

On the whole, Tajín is provided with ample land (p. 54), for which reason the current agricultural pattern functions successfully. However, in some cases—when a man has left several sons who exploit a given parcel—the pinch is becoming evident, and, in time, with a normal increase of population, land shortage is inevitable. There are several instances of families who have moved to communities to the west, where *monte alto* still is abundant, simply because the Tajín parcels were insufficient for all the heirs.

At present, 23 of the 107 Tajín parcels (table 5, *a*, *b*) are in the hands of "outsiders." Two are held by local residents who, because they give public labor in Ojital, are considered members of that community, not of Tajín. The remaining 21 parcels are owned by nonresidents, hence are available to Tajín only through loan or rental. Petróleos Mexicanos clings to two parcels (Nos. 76, 126), apparently on the chance that it may want to resume drilling for oil. Nine parcels are in the hands of non-Totonac owners, who have bought the land as an investment. The remaining 10 are owned by Totonac, scattered in various nearby communities.

Of Tajín families, or clusters of related families, 16 own more than an entire parcel of land: 1 has 4; 5 have 3; and 10 have 2 (table 5, *c*). In addition, one family has an entire parcel and fractions of 2 others; another has 2 parcels and part of another (table 5, *d*). Thirty-four parcels each are held by a single family or group of related families (table 5, *e*). Eight parcels are fractioned. Of these, one family holds two half-parcels, hence has the equivalent of an entire one. Two families, noted above, hold one and two entire parcels respectively, plus parts of others; the latter are counted among the fractions. The balance of the divided parcels is distributed among families whose total holdings are less than a full parcel.

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[96] Of the 27 parcels and 2 half parcels inhabited by a single household, 14 contain multiple plantings; that is, they are exploited by more than one family, although only one resides within the parcel.

TABLE 5.—*Parcel ownership*

	Number of parcels
Owned by "outsiders":	
a. Entire parcels, owned by local residents, who give communal labor in Ojital, hence are considered non-Tajín	2
b. Entire parcels owned by nonresidents:	
Petróleos Mexicanos	2
Papantla residents, non-Totonac	8
Tampico (?) resident, non-Totonac	1
Totonac non-residents, living in Ojital, Tlahuanapa, Papantla, Plan de Palmar, Vista Hermosa	10
Subtotal	23
Owned by Tajín Totonac:	
c. Entire parcels, each family or group of related families having 2 to 4 parcels	39
d. Entire parcels, each owned by a family or group of related families having, in addition, fractions of other parcels (see text); fractions included below, under *f*	3
e. Entire parcels, each owned by a family or group of related families with no other parcel holdings	34
f. Fractioned parcels (see text), including residue from *d*	8
Subtotal	84
Total	107

SETTLEMENT PATTERN

We have seen in the preceding pages that a relatively small proportion of the population of Tajín lives within the *fundo legal* and that most of the families are dispersed, on outlying parcels. Obviously, this particular scheme of settlement cannot be regarded as indigenous, since it was planned by Federal Mexican authorities in relatively recent years; the Totonac merely have occupied the plots of ground laid out by Government survey.

However, it appears that the combination of an urban center with a widely scattered rural population approximates an old Totonac settlement pattern. At the time of the Conquest, the Totonac had a number of sizable towns, of which "Cempoala" and "Quiahuixtlan" are best known. According to Torquemada (1:249), the Totonac and "Meztitecas" had large and important centers, about which the "king" and "principal" people and "nobles" lived—"although not in formed streets,[97] at least in concerted order." The rest of the populace lived scattered "in hills, mountains, valleys, and ravines."

At the time of the Conquest, Papantla evidently was an urban center, and its population has been calculated at 60,000 persons (p. 9). Although we cannot be certain that the ruins of Tajín are to be identified with the Totonac, if so, it is evident that some centuries before the Conquest there was at least one large Totonac center in the Papantla area. However, in the latter part of the sixteenth century, it is said that the Indians of Papantla lived "far from one another, on the slopes of hills" (Relación de Papantla), and this essentially disperse settlement pattern still holds for close to four-fifths of the modern Tajín population.

MODERN POPULATION

PROVENIENCE

It is difficult to identify the individuals who purchased lands in 1876, but our census gives a good idea of the provenience of the modern population. The first column of table 6 indicates the birthplace of the heads of families, together with that of their wives.[98] Clearly, most are natives of Tajín itself or of other communities in the general Papantla area. The intrusion from zones of intermediate and high elevation is negligible. If we consider Papantla as Totonac rather than mestizo, then it may be said that, without exception, all heads of families and their wives are from Totonac settlements.

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[97] However, elsewhere, Torquemada (1:396) credits "Cempoala" with streets; and Díaz del Castillo (1:170) mentions streets, as well as "the great plaza" and patios.

[98] In some cases, the head of the family is a lone man, or, more frequently, a lone woman. In cases of plural marriage, the birthplace of the several wives is included in the count. The record is almost complete for the entire community, although information is wanting for a few families.

TABLE 6.—*Provenience of Tajín population*[1]

Provenience	Heads of families and their wives	Parents and grandparents of preceding group
Lowlands: Papantla and surrounding zones (Veracruz)		
Cazones:		
Cazones	0	1
Coatzintla:		
Coatzintla	1	10
Contreras (formerly San Martín)	3	15
Escolín de Coatzintla	3	2
Poza de Cuero	3	7
Poza Rica	0	1
Coxquihui:		
Coxquihui	1	1
Sabaneta	0	2
Coyutla:		
Coyutla	0	1
Espinal:		
Entabladero	0	1
Espinal	0	2
Pacífico	0	1
Papantla:		
Agua Dulce	0	6
Aguacate (near Tecolutla)	0	3
Arroyo Colorado	1	1
Arroyo Grande	1	1
Boca de Lima	1	1
Carrizal	0	1
Cazuelas	2	1
Cedro, El	0	6
Cerro del Carbón	1	1
Cerro Grande	0	1
Chote, El	0	5
Escolín de Papantla	1	0
Gildardo Muñoz	2	0
Mesillas	3	3
Mozutla y Pital	1	4
Ojital	29	60
Papantla	10	22
Plan de Hidalgo (formerly San Miguel el Grande)	8	22
Polutla	8	9
Poza Larga	0	2
San Antonio	5	4
San Lorenzo	1	0
San Pablo	0	1
Santa Agueda	2	2
Tajín	250	225
Talaxca	5	20
Taracuán	2	0
Tlahuanapa	7	25
Papantla or Coatzintla:		
Chote, El (which one not specified)	0	1
Escolín (which one not specified)	1	2
Intermediate zone, between lowlands and highlands		
Filomeno Mata (Veracruz):		
Filomeno Mata (formerly Santo Domingo)	0	2
Hueytlalpan (Puebla):		
Zitlala	0	2
Jopala (Puebla):		
Chicontla	1	2
Highlands, Sierra de Puebla		
Ahuacatlán (Puebla):		
San Andrés [Tlayehualancingo]	1	2
San Juan Ahuacatlán	0	1
Tetela (Puebla):		
Tetela	0	2
Miscellaneous		
Altotonga, Veracruz	0	2
Huauchinango, Puebla	0	1
"Huasteca"	0	1
Molango, Hidalgo	0	1
Puebla, town unknown	0	1
"Sierra," town unknown	0	1
Teziutlán, Puebla	0	1
Tulancingo, Hidalgo	0	1

[1] Communities are classified according to present municipal affiliation, and the municipal units are grouped roughly according to elevation. The lowlands and the intermediate zone are Totonac, but non-Totonac elements are represented in the highland area and in the miscellaneous lot.

The second column of the table gives the provenience of the parents and grandparents of the heads of families and of their wives.[99] A much wider geographical range is represented. All the lowland areas and those of intermediate elevation are predominantly Totonac. In the highlands, the municipality of Ahuacatlán is mixed; San Andrés is Totonac, San Juan, Mexicano. Tetela likewise is Mexicano. The miscellaneous grouping is largely non-Totonac. Although Altotonga and Teziutlán have a low percentage of Mexicano, Totonac is not represented there. Today, the native speech of Huauchinango is chiefly Mexicano, but two pueblos of that municipality are predominantly Totonac. Tulancingo has a considerable Otomí and Mexicano element; Molango, a bit of Mexicano, with Otomí negligible.

In summary, it may be said that the present population of Tajín is essentially local, in the sense that it has been culled largely from the lowlands of Papantla and immediately adjacent zones. A minor ingredient is from Totonac areas of the Sierra de Puebla and of intermediate elevation, and there is an insignificant scattering of diverse, non-Totonac elements. On the whole, it would appear that Tajín is essentially Totonac in background, and we believe that its culture may be considered more or less representative of the Papantla zone.

Our impression is that the Totonac population of the Papantla lowlands tends to shift considerably, within a range of small compass; and the composition of Tajín probably is about as stable as is that of other small, local communities. These statements are largely impressionistic, but the original sheets of the 1940 Federal census tend to be corroborative. Ordinarily, the census records birthplace only by State; but in a number of communities of the Papantla area, precise birthplace gratuitously has been noted.

As a case in point, we may consider the provenience of the Totonac-speaking population of Aguacate, on the highway to Tuxpan. Its total population is 777, of which 498 speak Totonac. The provenience of the latter is as follows:

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[99] The table does not attempt to show the *number* of relatives which has come from each place. For example, one individual has one or more parents or grandparents from Cazones; 10 have one or more from Coatzintla, etc.

The data are not complete, yet they give a fair idea of the background of the local population. A surprising number of individuals is vague concerning the birthplace of grandparents.

Provenience:	*Totonac monolinguals*	*Totonac-Spanish bilinguals*
Cazones:		
Barra de Cazones	0	1
Cazones	0	2
Coyutla:		
Coyutla	0	1
Gutiérrez Zamora:		
Gutiérrez Zamora	0	1
Papantla:		
Aguacate	169	215
Arroyo Colorado	2	0
Caristay	3	1
Carrizal	14	5
Cerro Grande	1	1
Mozutla	5	0
Papantla	0	6
Pital	0	1
Polutla	2	0
Poza Verde	2	1
Puente de Piedra	4	1
Santa Agueda	16	6
Sombrerete	5	12
Taracuán	1	0
Volador	5	0
Municipal unit not identified:		
Arroyo Grande (Papantla or Gutiérrez Zamora)	0	1
Escolín (Papantla or Coatzintla)	0	1
Limón Grande	2	2
"Veracruz," town not indicated	2	0
Not specified	7	0
Total	240	258

Here again we have the impression that the local population is in a considerable state of flux, but that the essential elements are all Totonac, from the lowlands about Papantla. And much the same situation holds for other local communities, for example: Arroyo del Arco, Arroyo Grande de Boca de Lima, El Chote, Madero, Plan de Limón, Santa Cruz, and Serafín Olarte. This shifting of the local population undoubtedly has resulted in a general blending of culture, if indeed there were local differences at one time.

COMPOSITION

According to our count, the Tajín Totonac comprise 186 families,[1] with a total of 1,102 inhabitants. Accordingly, there is an average of nearly 6 persons per household. The composition of family groups will be discussed in Part 2 of this report.

Data at hand permit two independent analyses of the age-sex-speech distribution of population. For the first (table 7; fig. 1), information comes

TABLE 7.—*Composition of Tajín population*[1]

Age group	Males					Females					Total
	Language disregarded	Totonac monolinguals	Totonac-Spanish bilinguals	Spanish monolinguals	Subtotal	Language disregarded	Totonac monolinguals	Totonac-Spanish bilinguals	Spanish monolinguals	Subtotal	
0-4	63	-----	-----	-----	63	56	-----	-----	-----	56	119
5-9	-----	26	22	6	54	-----	45	4	6	55	109
10-14	-----	11	39	6	56	-----	19	17	5	41	97
15-19	-----	5	25	5	35	-----	23	16	4	43	78
20-24	-----	4	27	2	33	-----	24	9	4	37	70
25-29	-----	5	19	3	27	-----	26	12	3	41	68
30-34	-----	4	11	2	17	-----	11	7	0	18	35
35-39	-----	4	16	3	23	-----	10	6	6	22	45
40-44	-----	2	8	2	12	-----	10	4	2	16	28
45-49	-----	2	7	3	12	-----	6	1	1	8	20
50-54	-----	0	4	0	4	-----	2	2	0	4	8
55-59	-----	1	2	1	4	-----	6	2	1	9	13
60-64	-----	2	2	1	5	-----	2	0	0	2	7
65-69	-----	1	0	0	1	-----	2	1	0	3	4
70-74	-----	4	2	0	6	-----	2	0	0	2	8
75-79	-----	3	1	0	4	-----	0	1	0	1	5
80-84	-----	1	0	0	1	-----	1	0	0	1	2
85-89	-----	1	1	0	2	-----	0	0	0	0	2
90+	-----	0	0	0	0	-----	0	0	0	0	0
Total	63	76	190	34	359	56	189	82	32	359	718

[1] In 1940, by age, sex, and speech. The information comes from the original sheets of the 1940 Federal census, on file in the archives of the Dirección General de Estadística, in Mexico City.

The table gives the numerical data on which figure 1 is based; the relatively large number of Spanish monolinguals is discussed in the legend to that figure.

TABLE 8.—*Composition of Tajín population*[1]

Age group	Males				Females					Total
	Language disregarded	Totonac monolinguals	Totonac-Spanish bilinguals	Subtotal	Language disregarded	Totonac monolinguals	Totonac-Spanish bilinguals	Spanish monolinguals	Subtotal	
0-4	90	------	------	90	97	------	------	------	97	187
5-9	------	68	20	88	------	72	22	0	94	182
10-14	------	30	42	72	------	49	21	0	70	142
15-19	------	18	39	57	------	35	22	1	58	115
20-24	------	13	35	48	------	30	18	1	49	97
25-29	------	4	30	34	------	31	12	1	44	78
30-34	------	6	23	29	------	22	11	1	34	63
35-39	------	3	26	29	------	21	8	0	29	58
40-44	------	1	14	15	------	21	9	0	30	45
45-49	------	3	13	16	------	9	5	0	14	30
50-54	------	2	9	11	------	15	1	0	16	27
55-59	------	4	4	8	------	7	2	0	9	17
60-64	------	2	6	8	------	9	5	0	14	22
65-69	------	0	1	1	------	4	0	0	4	5
70-74	------	0	4	4	------	3	0	0	3	7
75-79	------	1	4	5	------	2	0	0	2	7
80-84	------	2	1	3	------	4	0	0	4	7
85-89	------	0	1	1	------	2	0	0	2	3
90	------	2	1	3	------	2	0	0	2	5
Total	90	159	273	522	97	338	136	4	575	1,097

[1] In 1947-48, by age, sex, and speech, according to our own census. The table gives the numerical data on which figure 2 is based.

Of the total population of 1,102, only 1,097 individuals are represented in the table and figure; 5 small children were excluded, for want of information concerning age and sex. Two were omitted through oversight; another was not reported by the family. Presumably the offspring of a plural wife, the father attempted concealment. The two remaining children allegedly are the result of an incestuous union, and the family denied their existence.

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[1] As explained previously, we have excluded from the census 16 families who live on Tajín lands but who give communal labor in Ojital centers; informants consider that they belong to Ojital, not to Tajín. By the same token, we have included one family which lives on an Ojital parcel, but which gives public labor in Tajín. Undoubtedly this is contrary to normal procedure, but we have tried to follow the Totonac definition of Tajín.

from the original sheets of the 1940 Federal census, which are in the archives of the Dirección General de Estadística. The second (table 8; fig. 2) is based on our own census, which was started in 1947 and completed in 1948. The 1947 data were corrected to include births, deaths, and marriages which took place through the early spring of 1948, but no effort was made to correct the age of individuals. As will be seen below, there must be such a wide range of error in the ages that a change of a year did not warrant the clerical work involved.

The 1940 census credits Tajín with a population of 718 persons. Our count, taken some 8 years later, yields 1,102. However, of this total, five children have been excluded (see explanation to table 8), and both table and figure are based on 1,097 individuals. Obviously, an increase of 50 percent between 1940 and 1948 is not natural. Although, by and large, we find the Federal census accurate, undeniably it is incomplete. It was taken by the local school teacher, who apparently overlooked a good many families which did not have children of school age.

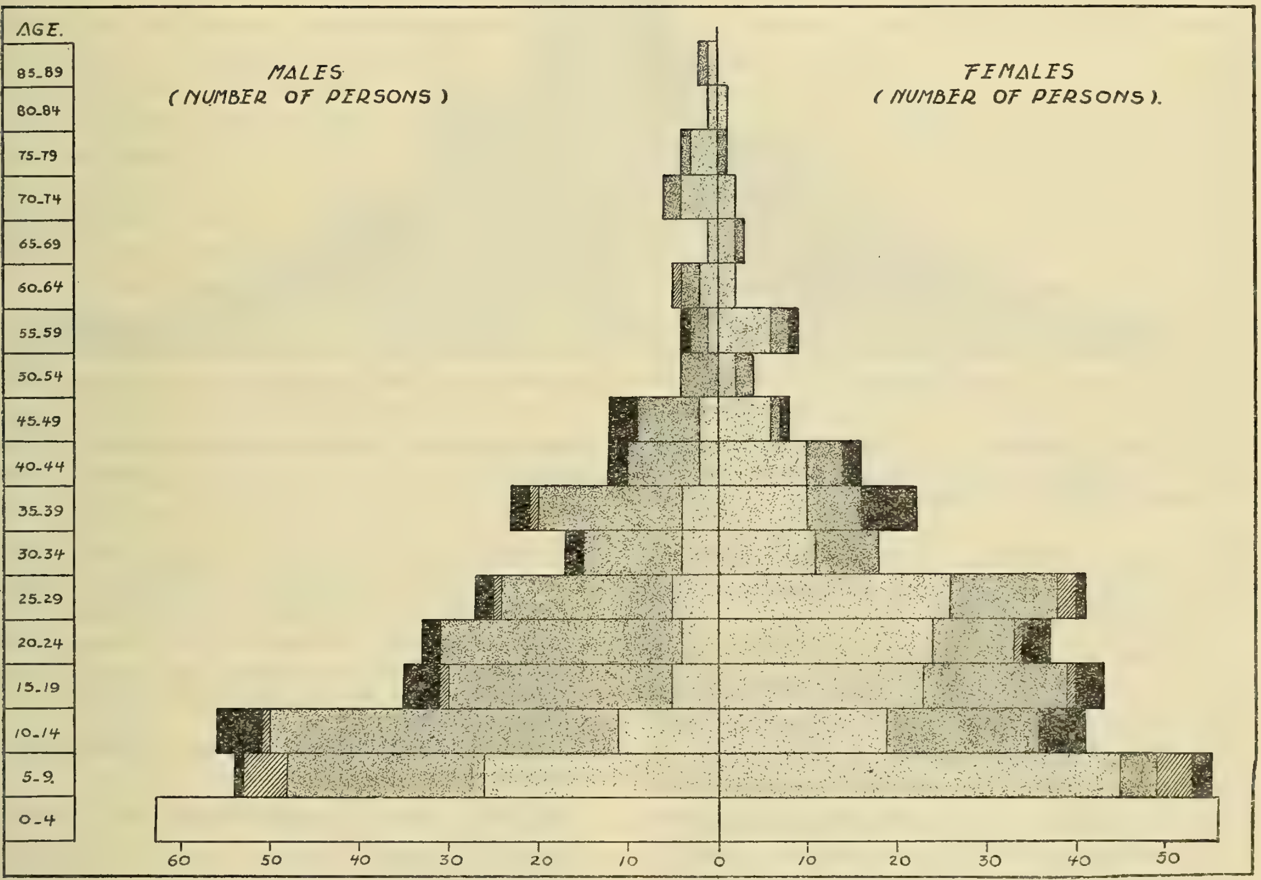

FIGURE 1.—Composition of Tajín population. Age, sex, and speech are indicated, according to data given by the 1940 Federal census (see table 7). For the youngest group (0–4 years), language has been disregarded. For other age groups, the key is as follows: light stipple, Totonac monolinguals; heavy stipple, Totonac-Spanish bilinguals; diagonal hatch and solid black, Spanish monolinguals. For Spanish monolinguals two symbols have been used. The individuals represented by solid black are definitely intrusive in Tajín, and the census records indicate that they were associated with the local oil camp. Of the remaining Spanish monolinguals, represented by diagonal hatch, it is difficult to say how many are intrusive. Presumably, most are temporary residents, because 7 or 8 years later, the occurrence of Spanish monolinguals in Tajín is negligible (cf. fig. 2).

Both figures 1 and 2 exhibit the expectable pyramidal form, despite a certain amount of unevenness. Foster (1948, p. 28) has noted that in Tzintzuntzan age is reckoned in current, not in lapsed time; but in Tajín, an individual generally thinks of his age in terms of *años cumplidos* (com-

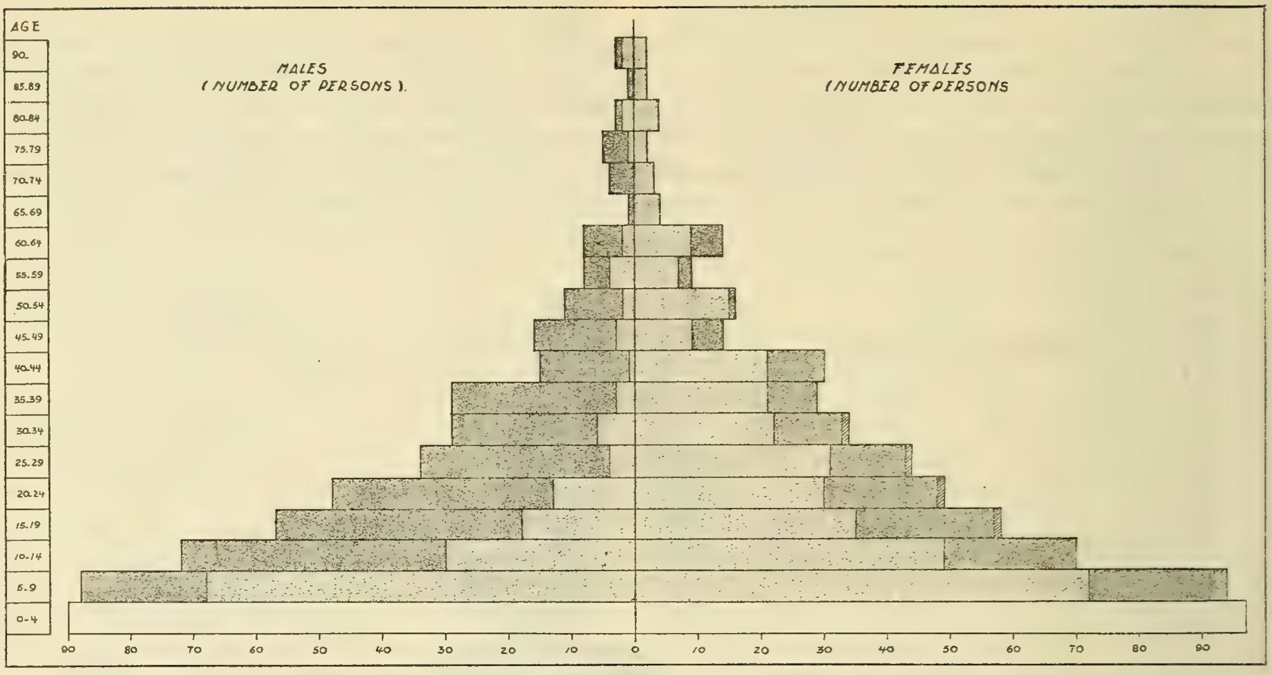

FIGURE 2.—Composition of Tajín population. Age, sex, and speech are shown; the data come from our own 1947–48 census (see table 8). The key is the same as that of figure 1, except that all Spanish monolinguals (4 cases only) are represented by diagonal hatch.

pleted years). For this reason, we have followed the usual age groupings, not the corrected form used by Foster.

It is little short of a miracle that both figures show a certain semblance of symmetry, for the Totonac are incredibly casual concerning age. That of children seems to be fairly well known, and a few families even treasure a baptismal certificate or a registry paper from Papantla. However, relatively few births are recorded. Ideally, the parents of a newborn infant report the birth to the local municipal office, where they are given a paper to be presented to the authorities in Papantla. There, they are expected to buy a special document and to present witnesses. The total cost comes to about $5.00 pesos, which is regarded as a needless extravagance. As a consequence, few births are registered.

Age among the adults is largely a matter of guesswork, and several extreme cases may be cited as examples:

> Carmen Pérez Reyes claims to be 80 years old. But her youngest child is 20, as attested by a birth certificate. Accordingly, it seems likely that the mother is some 20 years younger than she believes.
>
> Vicente de León gives the age of his wife as 60, although she has a daughter 8 years old. He calculates his own age at 85. However, for the Federal census, in 1940, he gave his age as 58; for a local school census, in 1945, as 65 years. But when our census was taken, in 1947, he suddenly attained the age of 85. As a matter of fact, he must have been close to 80, for he remembers the Ojital y Potrero subdivision of lands in 1876 and believes he was 8 or 10 years old at that time.
>
> José María García calculates the age of his daughter at 19; she herself thinks she is 30.

Not all informants overestimate their ages:

> Nicolasa de León, who appears to be in her 50's, claims to be 35; and her brother-in-law, Telésforo Hernández, apparently about the same age as she, coyly admits to 30 years.

It seems likely that the errors have canceled one another; at least, both figures 1 and 2 suggest a relatively normal decrease in population according to age. Even if the data are only approximately correct, it is evident that the populace of Tajín is essentially young; according to our census, 73 percent of the entire community is under 30 years of age; 84 percent, under 40.

Sex ratio.—The 1940 census shows an identical frequency of males and females—359 of each sex. On the contrary, our count, which is more complete, reveals a noticeable preponderance of females—522 males, 575 females. In the first two age brackets (0–4 and 5–9 years) there are more females; in the adolescent groups the ratio is roughly equal; but between 20 and 34 years, females again are more plentiful, and they are particularly strong in the 40–44 year age group.

The numerical superiority of women is not owing to a marked difference in the ratio of the sexes at birth (p. 68), so other factors must be responsible. Higher infant mortality among males (p. 68) is significant; so also is homicide, which takes a heavier toll of men than of women.

In our opinion, the numerical disparity between the sexes does not result from the migration of males to urban centers. This is at variance with the opinion expressed in conversation by Ing. José García Payón, whose acquaintance with Tajín is of many years standing. He feels that there has been a sharp reduction in the population as a whole within the past few years, owing to a movement to Poza Rica and to new settlements which have been founded along the Poza Rica-Tuxpan Highway. We find no concrete evidence of any such general reduction, and although we made more or less systematic inquiry, there is record of only a very few isolated moves to Poza Rica and Papantla, none to the Tuxpan Highway.

Speech.—The distribution of monolinguals and bilinguals is about what one would expect (fig. 2). In the second age group (5–9 years), most of the children of both sexes are monolingual; during the next age group (10–14), the effects of schooling are evident, and among the boys, there are more bilinguals than monolinguals. More or less successively, the men become increasingly bilingual, presumably as their contacts with Spanish-speaking Papantla are intensified. Relatively few girls attend school, and the percentage of monolinguals among females continues high; no woman above the age of 65 speaks Spanish.

The situation as a whole may be summarized thus:

	Males		Females		Total population	
	Number	Percentage of total males	Number	Percentage of total females	Number	Percentage of total population
Language disregarded (children, 0–4 years)	90	17	97	17	187	17
Totonac monolinguals	159	30	338	59	497	45
Totonac-Spanish bilinguals	273	52	136	24	409	37
Spanish monolinguals	0	--------	4	1	4	(1)
	522	99	575	101	1,097	99

[1] Less than half of 1 percent.

Of the total of 186 families, 30, or about 16 percent, are monolingual. The distribution of these families seems not to be significant, although there is a sizable cluster living in the southernmost parcels of the community; for the most part, these are related households of the very numerous Morales family. Nor is there any perceptible relationship between language and economic status; some of the most prosperous citizens are monolingual and vice versa.

Expectably, however, language and clothing are rather intimately related, and most of the bilinguals are found among those enterprising Totonac who have adopted "city" clothing—that is, shoes and trousers for the men, and ordinary dresses for the women. This association will be demonstrated concretely in Part 2 of this monograph. There also is an expectable relationship between language and those who hold or have held public office; the latter posts are confined to bilinguals. Moreover, the leaders of the dance groups also are chosen from among bilinguals; it is said that otherwise they are not able to train novices adequately.

It is evident that the Totonac language still is vigorous in Tajín. Spanish monolinguals are confined to four women, two of whom are visitors from elsewhere. The third is a woman from Papantla, married to Lorenzo Xochigua; although she understands Totonac, she is unable to speak it. The fourth is a young Totonac woman raised in this same household. During most of her life she has been in close contact with this non-Totonac element, and as a consequence, speaks only Spanish, although she understands Totonac.

Most settlers from outside learn the language. Juan Castro, a storekeeper, came to Tajín 25 years ago; he now speaks Totonac. Years ago, Isaac Méndez brought his bride from Papantla, and she too, has learned the language. Even in Papantla, virtually all shopkeepers speak Totonac, and vanilla buyers likewise are forced to learn the native language in order to make their purchases.

Totonac is not losing ground in Tajín, in the sense that it is being replaced by Spanish. Assuredly, the increase of bilinguals during the last decade has been pronounced, but it seems likely that for a good many years to come, Totonac will exist side by side with Spanish. Increased school facilities in Tajín may change this trend. However, the adolescent son of Lorenzo Xochigua, whose mother is a Spanish monolingual, actually learned Totonac when he started to attend school. In short, the school undoubtedly intensifies the bilingual aspect, but there is little indication that it tends to replace Totonac by Spanish.

BIRTH STATISTICS

We have precise birth records for 56 women of Tajín. The number of births varies from 1 to 12 per woman, and there is a total of 279 offspring, or an average of 5.0; the mode is 4. However, the great majority of these women are of childbearing age, so that the actual birth rate is somewhat higher. In the entire community, there are only 49 women above the age of 50, for 14 of whom we have data. They are credited with a total of 92 births, or an average of 6.6.

The "fertility ratio" also suggests that Totonac women are prolific. It is calculated on the number of children under 5 years of age and the number of women between 15 and 44. Within these specified age limits, Tajín has 187 children and 244 women (table 8). Accordingly, the ratio is 766.4, whereas for Mexico at large, settlements with 10,000 inhabitants or less, show a ratio of 696.2 (Whetten, p. 390).

Each of the 56 women was asked at what age she had borne her first child. Owing to the Totonac indifference to age, the figures are far from reliable. In some cases, no estimate could be made. In others, the age was calculated roughly from the present age and that of the eldest child, but the results were by no means reassuring, for on this basis, one woman was 11, and another was 50, at the initial birth. However, again, the errors appear to cancel one another. We have excluded the two extreme cases of 11 and 50 years; for the remaining 39 women for whom we have data, the average age at the first birth is 20.5. Our guess is that this age may be somewhat high.

Without precise records over a period of time, it is impossible to make accurate statements concerning the interval between births. The Totonac themselves say flatly that it is 2 years, and this seems not to be far wrong.

There is no pronounced difference in the ratio of the sexes at birth (cf. Foster, 1948, p. 228). Of the 279 offspring, 137 are male and 142 female. However, it is evident that in this small random sample there is a higher mortality among males. Of the 137 boys, 27 died either at birth or during the first year, as compared to 8 females. A total of 35 infant deaths is approximately 12.5 percent of the total births, or a mortality of 125 per thousand. This is somewhat higher than 121 per thousand, which is the average rate for Mexico as a whole (Whetten, p. 328). However, the latter is reckoned on the basis of live births; and our figures include not only live births, but premature, stillborn, and fatal births (table 9). Accordingly, infant mortality in Tajín probably coincides pretty closely with the average for Mexico at large. Apparently about half the children born die before the end of the fifth year (cf. Foster, 1948, p. 230); but a child who completes the first year seems to have a fair chance of survival. There is little apparent relationship between infant mortality and the economic position of the family.

The causes of death, as given by informants, are listed in table 9. In most cases, the cause is unknown. Next in frequency is "fever," which may include intestinal fevers as well as malaria. Other causes are diverse. Inasmuch as some of our women informants are elderly, a number of the offspring died during adult life (table 9). In passing, it may be noted that of the eight male adult deaths, five are from homicide. This is not wholly a matter of chance.

TABLE 9.—*Causes of death among 61 individuals*

Cause of death	Males					Females					Total
	At birth [1]	0–1 year	2–5 years	6–15 years	Adult	At birth [1]	0–1 year	2–5 years	6–15 years	Adult	
At birth [1]	6					1					7
Unknown		5	1	1			4	1	3	1	16
Bronchitis		1						1			2
Fever		8	3		1			1			13
Typhoid		1									1
Dysentery		1					1				2
Intestinal upset					1						1
Indigestion							1				1
Worms				1							1
Alferecía [2]		1									1
Cough									1		1
Whooping cough		1	1								2
Measles									1		1
Rheumatism									1		1
Mange		1									1
Magical causes [3]		2					1				3
Alcoholism					1						1
Homicide					5						5
Childbirth										1	1
Total	6	21	5	2	8	1	7	3	6	2	61
Total males	42										
Total females						19					

[1] Premature births, stillbirths, and fatal births have been grouped.

[2] We are uncertain how to translate this term, which refers to a malady confined to infants of 1 or 2 months of age. The child is said to cry until it turns purple, and it may froth at the mouth. It cannot be epilepsy, as some dictionaries indicate, because recovery often is complete.

[3] One death is attributed to *malviento*. For two others, it is said that the child "cried and cried" (*chilló y chilló*) before it died. This constant whimpering generally is diagnostic of *malviento* or of some other unnatural illness.

Sterility seems to be infrequent and we can give no precise figures. However, in a number of polygynous unions, the husband is said to have taken a second wife because the first produced no offspring. And we know of at least one man who, despite a series of wives, is said never to have had children. Infanticide is not common, but two specific cases were reported; details will be found in Part 2 of the report.

We can made no accurate statement concerning the increase in population in Tajín during the past few decades. We place little reliance on the figures below, which are included chiefly for the sake of completeness:

Year:	*Males*	*Females*	*Total*
1900 [1]	128	143	271
1921 [2]	323	360	683
1930 [3]	386	453	839
1940 [4]	358	360	718

[1] Mexico, Secretaría de Fomento . . . Censo general . . . 1900.

[2] Mexico, Departamento de la Estadística Nacional. Censo general . . . 1921.

[3] Mexico, Secretaría de la Economía Nacional. Quinto censo de población, 1930.

[4] Mexico, Secretaría de la Economía Nacional. Sexto censo de población, 1940.

MORTALITY

Our figures concerning mortality are both incomplete and inaccurate. They are based upon the municipal records in Papantla, which appear to be kept casually. Assuredly, most infant deaths are not reported, but, theoretically, all adult fatalities are recorded in Papantla.[2] In case of homicide, the corpse is taken to Papantla for autopsy, and it seems likely that the record of homicides is complete.

Records are available for 1945, 1946, and 1947; below, the deaths have been numbered and arranged in order of age:

	Age in years	*Sex*	*Cause*
1945:			
1	4	Female	Measles.
2	15	Male	Homicide.
3	21	Do.	Do.
4	23	Female	Fever.
5	25	Do.	Do.
6	[1] [28]	Male	[Homicide.]
7	30	Female	Nephritis.
8	40	Male	Anemia.
9	60	Female	Tuberculosis.
10	68	Male	Bronchitis.
1946:			
1	14	Do.	Homicide.
2	27	Do.	Do.
1947:			
1	55	Do.	Do.
2	70	Do.	Intestinal infection.

[1] The municipal records for this particular death are incomplete. However, we are acquainted personally with the case and have given the approximate age, as well as the cause of death.

In no case is an infant death recorded above. Either 1945 was an unfortunate year for the Tajín Totonac, or the subsequent records are incomplete. It will be noted that of the total of 14 deaths, in the course of 3 years, 6 are attributed to homicide; in other words, more than half of the total male fatalities are homicidal. This accords with the high frequency of homicide given in table 9. Moreover, the Papantla municipal records for the adjacent Totonac community of Ojital are corroborative. They show a total of 14 deaths during the same 3 years. Of these, 8 are homicides, and another is violent; its cause is said to be "fractured skull and contusions of the thorax." Even if these figures are not accurate, it is clear that homicide accounts for a very large percentage of Totonac deaths, especially among males.

In case of homicide, there is no chance of an incorrect diagnosis, particularly since the Totonac technique of liquidating an enemy generally includes both firearms and machete slashing. However, probably little reliance is to be placed on the other alleged causes of death. Measles, fever, intestinal infection, nephritis, anemia, and bronchial complaints all figure. "Fever" is a convenient term which may include malaria, as well as intestinal fevers. There is a certain amount of malaria in Tajín, although it seems pretty well concentrated in definite areas; part of the *fundo legal*, for example, seems entirely free of mosquitoes; part is infested. Few people complain of stomach and intestinal difficulties, although two men, well along in years, asked for suggestions to relieve kidney disorders.

Bronchial difficulties seem to be fairly common. We know of five deaths within recent years, and one some time ago, which presumably are to be attributed to tuberculosis (called *secapalo*); two were within the same family. In addition, a young man has a neck lesion which refuses to heal; a Papantla physician diagnosed his case as scrofula. Inevitably, tuberculosis is fatal. There are no medical facilities in Tajín, and even if a Papantla doctor is consulted, because of living conditions, it is difficult for a Totonac to follow the recommended treatment of rest and special diet.

We are not in a position to comment concerning the prevalence of venereal disease, but there are no obvious cases. Two middle-aged women of our acquaintance suffer severely from varicose veins; and among the younger women, childbirth takes a considerable toll. We know personally of six such fatalities, four previous and two subsequent to the official records given above.

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[2] We know of two local residents who, ailing, have left Tajín for medical attention, one going to Papantla, the other to Huauchinango. Each died outside the community, and quite naturally the deaths are not recorded for Tajín.

EXPLOITATION OF NATURAL RESOURCES[3]

Tajín is essentially an agricultural community, and exploitation of natural resources is focused upon the cultivation of the land. However, before considering agriculture, we shall see in what other respects the Totonac take advantage of the resources at hand.

WATER SUPPLY

The highest land in the community lies toward the north and northwest (in the vicinity of parcel No. 97, map 8). Here, a number of minor arroyos rise and flow south or southeast, to enter the Arroyo de Tlahuanapa, which forms part of the southern boundary of Tajín. None of our maps indicates the course of these minor streams, and relief is so complex and the courses so meandering that we did not attempt to add them to the base maps. Although these arroyos are, for the most part, annual, they provide the chief water supply during most of the year for the entire community.

Paradoxically, despite high humidity and relatively heavy precipitation, there is a shortage of water almost every spring (p. 47). Papantla faces a chronic water problem; and in Tajín, during years of insufficient rainfall, families who live in the northerly parcels may have to travel between one and two hours, to obtain water from the perennial Arroyo de Tlahuanapa. For those who have beasts of burden, this is an inconvenience; but for those who must travel on foot, it is a genuine hardship. It is said that because of the shortage of water several families have left Tajín, to settle elsewhere (in Talaxca, for example). However, since many own their lands and their homes, the bulk of the population endures the inconvenience.

There is scant hope of making water available for the fields in time of scarcity. The zone is so rugged and there is so little running water that irrigation is virtually out of the question, except on a very minor scale. About the only gesture made at present to alleviate the situation is to bring the image of St. Joseph from the neighboring Totonac village of Espinal each spring. Considerable ceremony surrounds this visit, and it is thought that if the saint is well treated, he will intervene, and the rains will come in time to save the crops.

The obvious answer to the problem of drinking water would be wells, and several have been attempted, with indifferent results. Two brothers, Lorenzo and Bernabé Xochigua, with the assistance of six or eight neighbors, excavated to a considerable depth in the floor of the Arroyo de Ortiga, which passes near their houses in the *fundo legal*. They were unable to penetrate the hard subsoil (in this case, *tepetate*), and although their "well" retains water for some time after the flow in the arroyo has dried, it cannot be considered successful. It is used only in times of shortage, and, ordinarily, water is taken from a small cavity dug in the bank of the arroyo, into which the water from the latter filters (pl. 4, *a*). A well in parcel No. 91, dug in the floor of a now dry arroyo, has water in abundance during the rainy season, but in time of scarcity, it too fails. Ing. José García Payón attempted a well in the nearby archeological zone but, again, without success.

Tajín is not far from the famous oil fields of Poza Rica, and formerly (from the early 1930's to 1940) there was an oil camp in Tajín, near the pyramids (apparently in parcel No. 76). For the use of the camp, water was piped from the Arroyo de Tlahuanapa, and although the oil company had promised to supply water to the *fundo*, the system was dismantled when the camp was abandoned. In the course of drilling, the company is said to have hit water—at a depth of 500 m., according to one informant. At such depth, water is of little practical advantage to Tajín, owing to the cost of boring and to the mechanical difficulties of bringing in the necessary machinery. Moreover, one or two wells would be of limited benefit to the community at large, for the majority of the populace is widely scattered on individual parcels of land.

The problem of potable water in Tajín was discussed with Mr. Richard Greeley, who felt that the only solution would be to pipe from the arroyo, with supply stations at given intervals. This would require the installation of a pump and a system of pipes, and the expense would not be warranted—again, because of the disperse settlement pattern. Although the few families of the *fundo* might be supplied, those on outlying parcels still would be without water in times of shortage.[4] Unfortunately, it would appear that there is no easy and economical solution.

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[3] Numbers in parentheses following the name of a plant refer to the herbarium catalog in Appendix C.

In any case, although water shortage is troublesome, most of the Totonac are apathetic. The women haul the water, and it is they who are most inconvenienced when springs and arroyos dry; the men regard the problem with admirable detachment, except when their cultivated fields are threatened. Yet any real solution would require wholehearted backing of the male population.

Even if water storage were solved on a sufficient scale to assure a year-round supply for each household, there is little chance that the custom of hauling water from the spring or arroyo would be abandoned, simply because of its social function. The daily chore of the women and girls of every family is to carry water; young boys assist occasionally, but adult men, only under very special circumstances.[5] However, boys and men loiter along the trail, or in the shrubbery near the arroyo, and the arrival of the girls gives the young people of both sexes one of their few opportunities to converse. Marriages and illicit unions result frequently from these encounters. A mother keeps a weather eye on her daughters, and twice during our stay, an alert mother and aunt zealously protected their young charges by throwing stones at the boys who were making advances.

Hauling water is almost a rite, and probably every woman has a well-established pattern.

> Ana Méndez selects a jar of small aperture and, as a cover, a receptacle formed of the half shell of the tree calabash. She also selects a cloth or towel to place on the head, beneath the jar, on the return trip. After washing the utensils well, she grasps the olla with the right hand, holding the base against her waist, with the mouth forward, and covered by the calabash. The towel likewise is carried in the right hand, leaving the left free. Upon reaching the arroyo, she arranges three stones in the shape of a triangle to support the jar. Next, she washes her hands and feet in the stream; then, using the gourd as a dipper, she fills the jar from the little cavity in the bank of the arroyo. She arranges the cloth on her head; sets the olla atop; and heads for home.

In the part of the *fundo* where we lived, drinking water invariably is collected from a shallow cavity dug in the arroyo bank; but water for laundry and general household use comes from the open arroyo, some distance upstream. Every kitchen has several covered jars in which potable water is stored; ordinarily, these sit on a narrow shelf, supported by four uprights. Drinking water is not boiled and receives no special treatment. Water for general use is stored in stationary jars outside the house, adjacent to the spot where the laundry is done. Usually the jars are set on low stones, not directly on the ground. They may be covered to keep out dust and rubbish, and frequently they are surrounded by a little fence of upright sticks or canes, to protect them from livestock (pl. 13, *b*).

The water in Tajín is extremely hard, and if allowed to sit, a large quantity of white sediment settles in the bottom of the vessel. Moreover, the water effectively resists lathering. To overcome this defect, the housewife tosses several handfuls of clean wood ash into the water to be used for laundry. This results in a sort of lye-water (*agua de lejía*) in which the soap lathers sufficiently to wash clothing. Lye-water also is used by some for washing the hair.

In time, the ash loses its potency. It then is removed and thrown against the exterior of the vessel, while the latter is filled with clean water and fresh ash. Many ollas are buried their full height in this discarded ash paste (pl. 13, *b*, ash paste in middle ground hides embedded jars). The Maya apparently have the same habit of accumulating ash about the outside of the water container (Wauchope, p. 138, pl. 36, *c*, *d*).

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[4] The possibility of catching the run-off from the roofs also was discussed with Mr. Greeley, but here, again, there are major difficulties. (1) We are by no means sure that the precipitation in the months immediately preceding the shortage is sufficient, since it falls in the form of light, continuous drizzles. (2) The number of tiled roofs is limited, and run-off from a thatched roof probably would be far from clear. (3) Although gutters could be constructed easily, through a series of split, overlapping, bamboos, hung from the eaves, storage facilities are more difficult of solution. (4) Since the subsoil is calcareous, a cistern presumably would have to be lined with stone or brick. But stone is extremely scarce, and brick would have to be hauled from El Chote, near Papantla. Moreover, no Totonac knows how to lay brick, and a mason from Papantla would have to be imported. (5) Unless cisterns were well covered, the breeding of mosquitoes would aggravate an already existing occurrence of malaria. (6) The Totonac almost certainly would have an aversion to cistern water, since they are convinced that rainwater breeds "worms" (*sabañones*) if allowed to stand more than a few days. (7) The use of a series of large earthenware jars for water storage was suggested to Mr. Greeley, but his calculations showed, at once, that an adequate supply could not be provided through such small-scale storage.

[5] Bernabé Xochigua hauls water frequently, because his wife is ailing; he receives general approbation as a considerate husband. However, one of our friends, well along in years, lives with a much younger woman, of whom he is extremely jealous. Because he suspected she was chatting with men along the trail, he forbade her to leave the house. Following this gesture, he had no choice but to haul water himself, to the vast amusement of the neighbors. He endured quiet ridicule for a few days, after which the woman resumed her usual trips to the arroyo.

LUMBER AND FUEL

In the Papantla zone, lumbering seems to have started early. By 1581, timber, especially cedar (No. 219), was being cut on a large scale and shipped by water to San Juan de Ulúa, where it was used in the construction of houses and vessels (Relación de Papantla). It is difficult to know when the forests of the Tajín area were cut, but there seems to have been considerable *monte alto* 60 or 70 years ago. Our guess is that the timber was not exploited, but was frittered away in the course of clearing lands for milpas. All local farmers agree that planting is much easier on fields recently cleared of *monte alto*, because for several years weeds present no problem. On the contrary, the struggle with intrusive vegetation is incessant on lands formerly grown to *monte bajo*. Accordingly, if there is opportunity to choose between the two types of forest, the normal inclination is to fell *monte alto*.

Relatively little virgin forest still exists at Tajín (map 6); and, except for three parcels on the western fringes, the stands are of very limited extent. The Totonac have come to appreciate what little remains of *monte alto*, because it produces the woods and lianas, used in house building and for other domestic purposes. Magdaleno Méndez is said to plant on rented land, so as to preserve what little virgin forest is found on his own property. Arnulfo García owns two of the westerly parcels (Nos. 177, 178) of virgin forest. From time to time, he sells a bit of timber, but he refuses to permit cutting on a large scale, proclaiming, "May I not see the destruction of my lands; later, let my sons do what they like with them." He also is the owner of parcel No. 124, which adjoins the *fundo* on the south; here, too, he refuses to allow extensive cutting, in this case, for fear the little Arroyo de Ortiga may dry.

Monte alto contains many fine hardwoods, of which the most prized are *cedro* (cedar), *alzaprima*, *chijol*, *caoba* (mahogany), *zapote chico*, *moral*, *palo de rosa*, and *escolín* (Nos. 219, 206, 176, 194, 191, 324, 171, 338, respectively). Of these, the cedar probably has the widest general utility; it is considered preferable to mahogany because of its greater resistance to borers. The most durable of all the woods apparently is the *chijol*, although it is said that "any wood will last longer if the tree is felled in November, when the moon is in conjunction." Most of these hardwoods now are scarce in Tajín, since the virgin forest has been pretty well cut. For the frame of the house, probably the *zapote chico* and the *alzaprima* are most frequently used today, simply because they are somewhat more plentiful than the others. In addition, a great quantity of other woods are put to a variety of uses. They will be mentioned later, in connection with housing and various manufactures.

In spite of this repertoire of fine woods, which must have been abundant until relatively few years ago, the Totonac are extraordinarily inexpert at lumbering; "it is difficult to cut a plank straight." Juan Villanueva, formerly of Polutla, and Bartolo Simbrón are said to have a fair skill, and a couple of others are willing to try their hands. However, if a resident of Tajín wishes to build a house with squared beams or with plank walls, or if he wishes to have furniture made, he generally buys the necessary trees, and then looks outside of Tajín for a sawyer (*aserrador*). Every year, a few outsiders—generally highlanders (*arribeños*) from some unspecified parts of the Sierra, but some, at least, from Cuetzalán—come looking for work. Among them, some may know how to saw lumber and may bring the necessary tools. An *aserrador* is given his meals, and his work is paid by the piece, at a rate fixed in advance (p. 189).

Dependence upon outside labor for dressed lumber does not mean that a house cannot be built without such assistance. Most of the houses have both posts and beams unsquared, and the walls are made of upright saplings or of bamboo. In this case, the Totonac himself cuts the necessary timber, either on his own land or on that of another, after arranging the price with the owner.

Wood is the universal fuel in Tajín. Occasionally, during chill weather, a fire is built on the earth floor of the house, and a sizable trunk is allowed to smoulder, for the heat it produces; it is referred to jocosely as a "stove." Day in and day out, every family uses wood as the fuel for cooking. Dry corncobs are utilized "when there are any," to "help the wood burn." Never, so far as we know, is reliance exclusively on corncobs.

Sometimes brush and small trees are cut in an old, abandoned maize field (known as an *acahual*); once dry, they serve as fuel. However, most firewood is gleaned from current milpas. When the latter are cleared for planting, the trees are felled, allowed to dry, and fire is set to them. Trunks and heavier branches seldom burn completely. Later, they may be dragged to the edge of the clearing; sometimes they are left unmoved, and the maize is planted about them. This half-burned firewood is collected from one's own cornfield or from that of a friend, who has given permission.

Certain types of wood burn better than others. The *zapote chico* (No. 191) is of little use; so also is the *chaca* (No. 228). The popularity of the latter is not enhanced because of a local saying, "He who burns *chaca* becomes poorer than ever." Laurel (presumably No. 130) and akásʔti (No. 218) burn rapidly but are considered good. Other acceptable firewoods include: *ojite* (No. 98), *chijol* (No. 176), *alzaprima* (No. 206), at least two of the three *capulines* (Nos. 21, 41, 85), and *quince* (no specimen).

The collection of firewood generally is a chore for the man; he cuts the wood with a machete and hauls it to the house, using a head tump. This often is an early morning task, although when a man works in his milpa, he usually brings the fuel in the evening, when he returns home. Women who gather firewood usually carry it on the head, without the aid of a tump. A moth larva (of the family Psychidae)[6] known as *carga-palitos* (wood-bearer; maksakná) produces a long, slender sack, which incorporates odd bits of stem, fiber, etc. In the bag is placed tobacco and a clove of garlic, or an avocado leaf, garlic, and mineral tar (*chapopote*). It is tied to the wrist or the neck of a small boy, so that when he is grown "he will be able to find firewood, even if there is none." According to another account, the bag is tied to the lad's waist, in the belief that, once adult, he will be able to carry wood without injury.

Firewood often represents a very handy means of augmenting the cash income. Wood sold in Papantla helped provide working capital for the construction of the new Tajín school. Each week, the family of Magdaleno Méndez takes a load of wood to town, to help defray the board of a young son who attends school there. And almost every Sunday, two or three men from Tajín head for Papantla with donkeys laden with firewood. The latter brings about $4.00 pesos a load.

Ordinarily, a man cuts the wood for his own household, but occasionally he engages someone to do it in his stead. The price is $4.00 to $6.00 pesos the *tarea* (8 cubic *varas*, or yards); and since the latter measure is the amount generally cut in a day, the price is roughly equivalent to a daily wage. Lands of virgin forest almost never are rented, but one who rents a plot with second-growth timber has the right to cut what he likes, provided he has paid the rent in advance. Ordinarily, the renter clears the land and sells the firewood. Eduardo Núñez lets his lands of *monte bajo* on a different basis; he retains the wood and charges no rent. In this case, the renter clears the land and the owner sells the wood.

Firewood is stored in a highly characteristic manner. The sticks, cut to uniform length, are stacked between the outer wall of the house and a pole set vertically in the ground, something less than a meter removed (pl. 13, *c*), its tip tied by a short length of rope or liana to one of the uprights of the house wall.[7]

OTHER EXTRACTIVE ACTIVITIES

Stone is scarce, except about archeological sites. It is little used, although occasionally a flagged path may be laid across a muddy house clearing. There is no quarrying as such, and stone for the masonry school was fished out of an archeological mound, on the eastern fringes of the *fundo legal*.

At present, the entire supply of lime (*cal*, kašta) comes from outside the community, and the small amount required by every household for the preparation of certain maize foods (p. 151) is provided by occasional vendors who come from the little village of El Chote, on the outskirts of Papantla.

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[6] Identification through the kindness of Dr. Cándido Bolívar.

[7] Similar disposition of firewood probably is common in the Huasteca. We observed it occasionally in the Tamazunchale-Tancanhuitz area, and it is suggested by an indistinct photograph taken years ago at Tancoco (Starr, facing p. 284, largest house, in center). The Maya may also have a parallel manner of stacking fuel, although from one photograph, the wood is piled not against the exterior of the house, but inside the kitchen, between the wall and a vertical post (Wauchope, pl. 31, *a*).

Lime seldom is required in quantity, since domestic architecture is not of masonry. But when the stone schoolhouse was built, lime was hauled from El Chote and Mesillas, where there are commercially exploited deposits. Formerly, there were at least two ovens for burning lime in Tajín, one at the house of Magdaleno Méndez and the other at that of Donato Santes.

There is no mining, and the brief flurry of oil exploitation, in the 1930's, has been mentioned previously (p. 46). Of this intrusive petroleum element, little trace remains in Tajín, although the 1940 Federal census lists a number of extraneous individuals as employees of the oil company. The ruins of the old camp are effectively hidden by dense vegetation; and, culturally, the enterprise seems to have left surprisingly few scars. The Totonac, it is said, had little direct contact with the outsiders, and their efforts were confined to work on the trails. A couple of parcels in Tajín (Nos. 76, 126) remain officially in the name of Petróleos Mexicanos, and the threat of drastic acculturation, which would convert Tajín into a miniature Poza Rica, is not entirely past. In fact, now, in 1949, it is an imminent danger, since two new wells are being exploited successfully in San Antonio, one of the Ojital centers, on the very borders of Tajín. In a way, it has been fortunate for us that the zone potentially is oil land; only for this reason has it been possible to obtain local maps to large scale, with individual holdings indicated (map 8, for example).

HUNTING

The sixteenth-century Relación de Papantla reports an abundance of deer and rabbits, as well as "many parrots and many monkeys (*micos*) and martens, and very beautiful macaws." These days are long since past. "Years ago, it was not necessary to go to Papantla for meat," because there were deer, peccary, and armadillo. Now only small game is found near Tajín, and it is not plentiful. For deer or peccary, one must go to *monte alto*, usually to the great stands to the west, about Palma Sola.

Of the big game animals, deer was the most plentiful. Two types are recognized: one large (*venado*, ju·ki?), and one small (*temazate*, *cuachichoco;* skátan, stákan). As recently as 15 years ago, a few deer could be found along the borders of Ojital and Tajín (parcel Nos. 97, 98, etc.). Some still frequent the lands of Gildardo Muñoz, which adjoins Tajín on the south, but these are strays which have wandered from *monte alto*.

We were told of several methods of hunting deer, all with firearms. In his youth, Juan Bautista used to go forth at night, with a (commercial?) jack light. Nowadays, it is more popular to hunt by day, in groups, either with or without dogs. In the latter case, three or four hunters enter the virgin forest, leaving a distance of 80 to 100 meters between one another. Thus separated, and with firearms ready, they advance, side by side, toward a road or clearing, "breaking the forests," as they go. Walking is not difficult, because *monte alto* has little undergrowth. The hunters make a great clatter, to startle the game, and each toots on a whistle—a simple length of cane, open at one, closed at the other—so that his companions may not lose track of him. Such a drive may last 8 or 10 hours.

When dogs are used, more hunters are necessary. A man who knows the ground and the trails of the deer directs the drive. He stations a companion at each of the trails, forming a large, irregular circle of spaced hunters. When each is in his place, a horn is blown and the dogs are freed. They run into the forest, scattering the deer. The latter try to escape along their usual trails but are intercepted by the stationed hunters.

Four hundred years have passed since the first contacts with European culture, and in Tajín there is no recollection of hunting with the bow. However, the second husband of Dorotea de la Cruz, one Miguel Andrés, was a Totonac from the vicinity of Comalteco.[8] He used to tell the grandchildren of Doña Dorotea how they hunted in Comalteco in the old days, and one of these, Pedro Pérez, recalls the following:

> For deer, the root of the fig (*higuera*, No. 222) was twisted well, to form a noose, which was attached to a flexible stick set in the ground, presumably along the deer trail.
>
> Deer also were impaled. Several stakes, made from the heart of the *zapote chico* (No. 191), were planted in the deer trail, with the exposed tips well sharpened.
>
> The stakes seem to have been set diagonally, so that one point went upward, to the right, and the alternate

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[8] Today, Comalteco has an insignificant occurrence of Totonac speech; no other native language is reported in the census. On the chance that the information left by Don Miguel may shed light on former Totonac hunting techniques, it is included here.

one, upward and to the left. The whole business was covered with leaves and branches. The dogs were let loose, and the frightened deer, attempting to escape, was impaled.

Don Miguel likewise is said to have described a deer call, used in April, to imitate the cry of the fawn. Two lengths of cane were cut, one of slightly greater diameter than the other. To the tip of the smaller cane, a cobweb was glued securely, and the end inserted in the larger cylinder. The hunter blew on the larger cane, prudently taking refuge behind a tree, because the onrush of the doe generally was violent.

In Tajín, it is customary to divide the meat between the several hunters. The heart is tossed in the fire and eaten at once, with salt; it is thought to give one strength. Generally, the head and hooves are smoked. If dogs are used in the chase, the head of the deer invariably goes to their owner, for his animals to eat. To sell the head is unthinkable; in that case, "the dogs never would be able to locate another deer." However, great care is taken that the dogs have no access to the hooves, which are hung high in a tree, or behind the house. Should the dogs eat them, "they will be unable to run after deer."

The deer provides important talismans for hunting. A membrane is cut from the throat and stuck to the corner of the house, to insure subsequent good hunting. "A small stone" (presumably bezoar) also is said to bring good luck in the chase. According to one informant, it is found in the heart; according to another, in the intestines. What is even more prized as a charm is a "worm" (*gusano*, stakulu·ajuke, šlika¢inju·ke; latter, said to mean the diviner of the deer). All agree concerning its virtues, but its whereabouts is uncertain. One thought the worm was to be found in the hooves; another in the neck; generally, it is described as far up the nose of the animal, where there are two hollows, in each of which a "worm" lives. It must be extracted immediately the deer is killed or it will disappear. Francisco Villanueva once saw the worms but did not remove them. Santiago Simbrón has seen the hollows, but not the worm; his father, however, had one, and it brought him marked success in hunting. If shown to anyone, the charm loses its virtue. Stored in a small cane, with a little blood from the deer, it is kept in a corner of the house, and is carried only when the owner goes hunting. If there are a dozen men, engaged in a large drive, the deer infallibly falls to the owner of the "worm."

The peccary (*jabalí*, kiwipašni; kiwi, *palo; pašni*, *puerco;* free translation: forest pig) always has been less plentiful than the deer. Like the latter, today it is found chiefly in *monte alto*. The meat is not prized, at least by Pedro Pérez, who complains that it has the flavor of uncastrated hog.

The peccary is chased with dogs. When tired, it makes a stand in front of a large tree, generally one with surface roots. It grinds its teeth and gives vigorous battle with its tusks. The animal is dispatched by a shot, for it is considered dangerous quarry and no hunter cares to approach. Sometimes, the dogs are injured and it is advisable to cure them at once. The hair from the back of the peccary is collected and burned, and the resulting ash is sprinkled on the wound. This is parallel to the magical treatment given humans who are suffering from "fright."

Although relatively scarce, the armadillo (kúyuˀ) still is found occasionally. Its meat is considered tasty, similar in flavor to pork, and may be served with *mole* sauce (p. 158). A dog runs the armadillo into its hole in the ground; it enters head first and is extracted by pulling on the tail. The throat is cut with a knife or machete.

No other way of hunting armadillo was reported locally, but Pedro Pérez, on the authority of Miguel Andrés (p. 74), describes a deadfall used formerly in the Comalteco area. It was similar to that shown in figure 5, but the uprights were taller and were reinforced by the addition of securely tied crosspieces. However, the trunk was suspended in the middle, not at the end, with a quantity of stone on top, to give added weight.

From time to time, a lynx (?) (*onza*, tánkiwi, translated *cola de palo*, or *nalgas de palo;* wooden rump) is killed; the meat generally is eaten in *mole* sauce. Jaguar (*tigre*, la·panít) was found only in the days of *monte alto;* a smaller feline, lighter colored, called *tigrillo* (soke·mi·sin), is, however, killed once in a while. Similarly, a hunter may take an occasional crack at small animals such as the opossum (*tlacuache*, ištán), the raccoon (*mapache*), skunk (*zorrillo*, sásan), badger (*tejón*, škuti), and marten (*marta*, stawákua).

The badger may be hunted with dogs. If they grab the quarry, it is likely to cut their throats, and ideally, the dogs pursue the animal and hold it at bay until the hunter arrives. For the marten, a special procedure is described. This animal is credited with a "very powerful stare"; when confronted by a lone hunter, it regards him with such intensity that he is unable to shoot. He may pull the trigger three times, but the arm refuses to fire. The remedy is dual: three hunters face the animal, evidently to dissipate the potency of its gaze, and the shotgun is "cured." First, it is fired at a nest of *papanes* or of *chachalacas*,[9] then is loaded with precisely seven shots. Following these elaborate preliminaries, the marten is dispatched. We are uncertain why this particular animal warrants so much fuss.

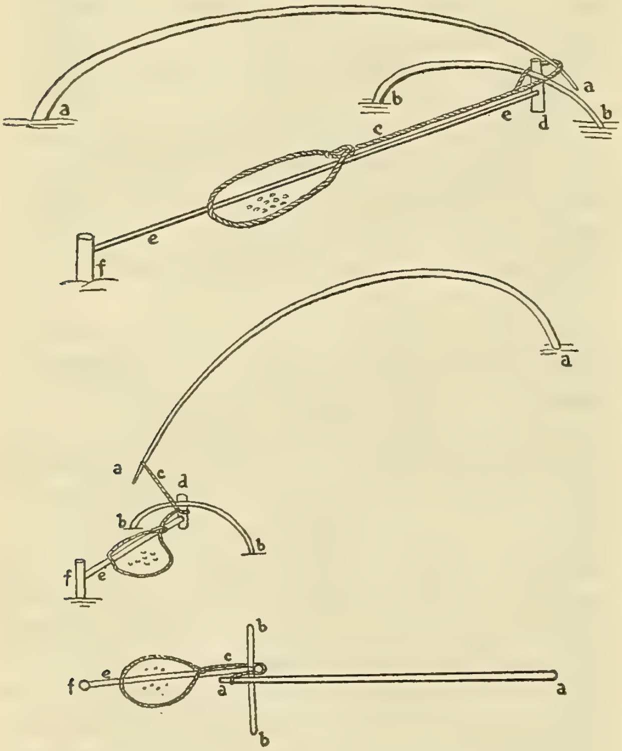

FIGURE 3.—Bird Traps. Two variants are shown.

Upper: *a*, A long pliable twig; its butt is planted in the ground; its tip is bent so that it nearly touches the earth. *b*, A shorter twig, arched, and both ends set firmly in the ground. *c*, A cord. One end is looped over the tip of *a*. A short stick (*d*) passes through the loop, on the far side of *b*, but does not touch the ground. *e*, The trigger, which is supported by contact against *d* and *f*; the latter, a short post set upright in the ground. Grains of corn, or other bait, are placed beneath the trigger and are more or less enclosed by the noose end of *c*, which is laid on top of the trigger. When the bait is disturbed, *e* falls, and with it, *d*; twig *a* is released and springs upright, and, ideally, the bird is caught in the noose of *c*.
Middle: Basically the same, but *a* and *e* are alined instead of being nearly at right angles.
Bottom: View from above, of the trap shown in the middle sketch.

Birds are not hunted systematically or on very large scale. Some are not hunted at all; some are sought only because they are birds of prey or because they destroy the crops; others, because they are believed to have medical or magical properties;[10] and still others, because they are desired as pets. However, some birds—such as the *chachalaca*, *paloma*, *perdiz*, *torcaza*, and *tortolita* (Nos. 4, 24, 26, 36, 38)—are hunted primarily for food (table 21, Appendix D).

The arm in general use is an ancient type of muzzle loading fowling piece (*carabina*) (pp. 247–248). For birds, small boys use a sling, which consists of a Y-shaped stick, the arms of which are connected by a narrow strip of rubber. Adults rely either on the *carabina* or a trap.

A simple, basic trap (fig. 3) is used for birds in general, especially doves (*palomas*), and for other small game, such as rabbits or prairie dogs. Not everyone knows how to set such a contrivance. A boxlike trap (fig. 4) is used by Conrado García for catching doves. This type is not general in Tajín and perhaps represents the influence of the lad's stepfather, a Sierra Totonac from San Andrés Tlayehualancingo.

A model of the deadfall (fig. 5) used in former times by Miguel Andrés, of the Comalteca zone (p. 74), was made for us by Pedro Pérez. It is designed chiefly for doves, but a more substantial version may be used for armadillos.

Snakes, poisonous and otherwise, are abundant. When one goes out at night, he may light a cigarette, in jest, "to frighten the serpents," but there is no indication that tobacco is used in capturing snakes, as Sahagún (3: 207) has described for Totonacapan. If one meets a snake on the trail, he cuts a pole with his ever-handy machete and beats the animal to death. Some kill a snake with the machete, using the blunt rather than the sharp edge of the blade. The latter "might lop off the head, which would bite if it hit one." Modesto González would not consider killing a snake with the cutting edge of his machete: "The serpent is unclean, and my machete would be used later to cut sugarcane and other things to eat." A whole series of beliefs is associated with snakes; among other things, it is thought that a weapon is ruined if it is aimed at the snake known as *cuatro narices* (four noses; kanálu·a).

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[9] Some of the local birds are listed in Appendix D; the *papan* is No. 25; the *chachalaca*, No. 4. In the succeeding paragraph numbers in parentheses following the name of a bird apply to this Appendix.

[10] For example, the *tecolote* (No. 34) is thought to be the messenger of the devil, who brings news of illness and death. Because of this, some kill it. But in order to do so, it is necessary to mark a cross on seven shots and to add a bit of garlic (to the barrel of the shotgun?).

Although hunting is not of the slightest economic significance and now is largely a matter of diversion, it still is surrounded by a good many magical beliefs. A hunter carries no money, knife, matches, or meat with him, and, theoretically, he should avoid women completely for a full day before going hunting. If these restrictions are not observed, he will kill no game, or he will meet with an accident in the *monte*. Any woman—young or old, virgin or married, menstruating or not, pregnant or otherwise—may touch a gun; but should she step over it, the weapon is ruined (p. 248). The result is precisely the same as that which comes from shooting at the *cuatro narices*, as noted in the preceding paragraph.

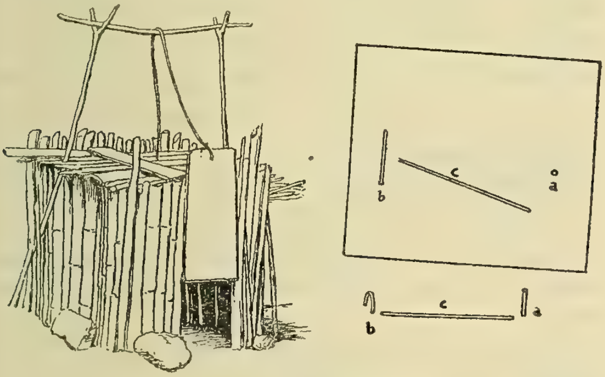

FIGURE 4.—Bird trap. Boxlike trap for doves, made by the stepson of a Sierra Totonac, now resident in Tajín. The trap may be an intrusive type; it is not in general use locally. Walls of the rectangular enclosure (ca. 75×65 cm.) are formed by uprights of odd sticks and split bamboo, secured with liana; the roof is made by laying sticks and bamboo across the top of the walls. The door is a bit of board from an old box, perforated, so that a cord may be attached. The latter is looped over a twig, which is supported by forked poles; the cord passes between the slats of the roof and, inside, presumably is attached to the trigger. Bait is strewn on the ground, within the cage. The trigger arrangement was not set at the time of our visit, but apparently is basically similar to that of figure 3. *a*, A short twig, set upright in the ground, within the enclosure; *b*, a twig bent to form an arch, both ends stuck in the ground; *c*, presumably the trigger, lying loose on the ground. With the release of the trigger, the door drops, imprisoning the birds.

Moreover, the forests are the charge of two legendary figures, one male and one female; in order to hunt successfully, their blessing, or at least that of "the old man of the *monte*," is indispensable. To this end, a hunter lights a candle made of the wax of the native bee and offers tobacco to any ancient stone idol he may meet in the forest.[11] If no idol is at hand, the offering is stuck in a tree, and the hunter goes complacently forward.[12]

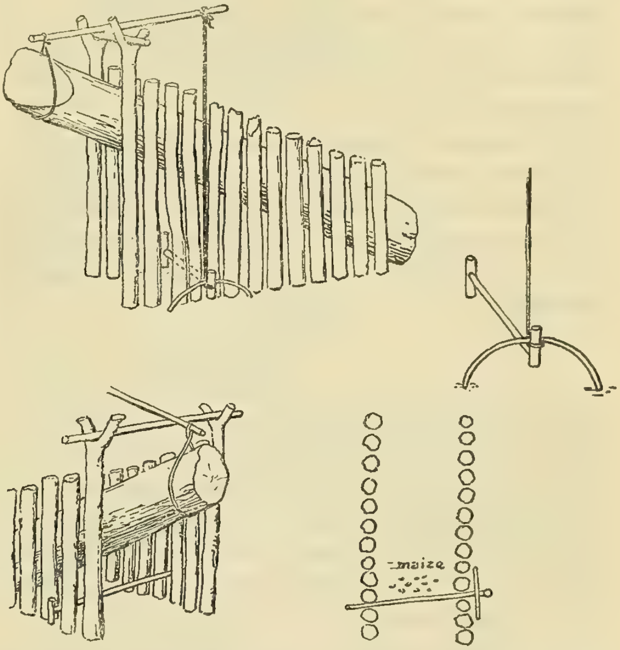

FIGURE 5.—Deadfall. Model of a type used in former times by Miguel Andrés, now deceased; a local resident, but native of the Comalteco area. Two forked posts are planted in the ground and behind, on each side, is set a row of vertical stakes, of progressively diminishing height. A substantial log is placed within the lane outlined by the stakes; the rear end rests on the ground, while the front is raised. The latter is held in position by a cord attached to one end of a light pole, the latter resting across a twig laid in the forks of the front posts. At the other end of the light pole, a liana is tied; it drops to the ground, on the outside of the staked wall, where it is attached to the trigger. In principle, the latter is similar to that of figure 3. Height of forked posts, ca. 80 cm.; length of lane, ca. 60 cm.

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[11] A similar belief evidently may have been current in the Huasteca, for in Tapia Zenteno (p. 107), one finds the following query: "Quando vas a cazar, o a buscar colmenas, hablas primero, o les das de comer a los Ydolos, que estan en los montes?" Of the Maya, we know that "invocaban al demonio y le quemaban incienso . . ." (Landa, p. 164).

[12] One of our Tajín friends, Antonio Bautista, once went hunting to the west, near the little settlement of Jorge Cerdán. There he found an individual who had a stone idol. He offered to buy it but was told: "No. When I want to eat venison, I light a candle on the ground in front of the idol. Then I go to the *monte* and return with a deer."

One may destroy his companion's luck in hunting by tossing a handful of earth behind him. If the victim realizes what has taken place, he counteracts the evil by rolling a cigar. This he deposits in the notch which he cuts with his machete in a cedar or *zapote chico* tree. "The old man of the *monte*" is said to be inordinately fond of tobacco, and in thanks, he gives the hunter the desired quarry.

Christian saints also are associated with hunting. One informant thinks that a candle should be burned for St. Lazarus. Others believe that St. Eustace is a better bet; "he has his deer." A candle is burned to him and a prayer (*oración*) recited.

FISHING

Papantla and Tajín are too distant from the Gulf and from large streams for fishing to have been of major importance in aboriginal times. Nevertheless, there is a local tradition to the effect that formerly Papantla was located at the archeological site of "Tuzapan," and that the population moved to the present spot so as to be handier to fishing resources.

The Suma (No. 449) makes no mention of fish, but the sixteenth-century Relación de Papantla states that the Indians "plant and fish in the rivers, by which they support themselves"—thus placing fishing on an equal basis with agriculture. The same document reports the use of both hooks and nets. Undoubtedly, this part of the account refers not to Papantla proper, but to the settlements along the borders and at the mouth of the Río Tecolutla. The port of the latter name was famous for its fish in colonial times, and by 1610, five Spaniards were exploiting its salt and fish resources (Mota y Escobar, p. 233).

Fishing possibilities near Tajín are pretty limited; even so, fishing is popular among the younger men. Some go to the Arroyo de Tlahuanapa, at a point about 2 hours on foot from the *fundo*. Others, especially those who live in the northwesterly parcels, go to the Coatzintla area, in the vicinity of old Troncones, now known as Kilómetro 59. Here there is good fishing in several arroyos which drain to the Río Cazones, and even in the latter itself. Since all waterways are Federal property, it is not necessary to obtain permission to fish, even though the streams run across private lands.

Fishing is most common from April to July, when the water in the arroyos is low. It is advisable, however, to avoid days dedicated to important saints, and anyone who fishes during Holy Week endangers his life. A fisherman may light a candle to St. Raphael, to insure good luck; or he may place a candle on the family altar, designed for any saint who happens to grace the domestic shrine.

Seldom does one fish alone. Four to ten congenial young men take their respective lunches and spend a day at the fishing grounds. Sometimes they are accompanied by their young sons, and the small boys learn through observation and practice. Generally, however, they amuse themselves looking for crustaceans, while their fathers concentrate on larger spoils.

The following fish are found in the arroyos near Tajín:

a. guapote, huapote (wapa); "similar to a *mojarra;* all sizes." (Undoubtedly a member of the genus *Cychlasoma*).[13]

b. guavina, guevina, huabina (tokošwa, líntin; Totonac names said to be used interchangeably); "long, dark; 8 to 35 cm." (Probably *Philypnus dormitor* or *Eleotris pisonis*).

c. panzoncito, timpu (stínpun); "similar to the preceding, but smaller." (*Mollienisia sphenops*).

d. solote (šul); "similar to the *guavina*, but larger; horns or whiskers at either side of the head."

e. churro, trucha (lakakuyu). (Probably *Agonostoma monticola*).

f. róbalo (no Totonac name); "one 40 cm. long is large." (One or more species of the genus *Centropomus*).

g. sardina, pasandía (paskóyal, paskóyot); "small, with a striped belly which glistens (*relumbra*)." (*Astyanax fasciatus mexicanus*).

In addition, as a byproduct, fresh-water crustaceans and a shellfish often are collected:

h. camarón (iškáqtan). (Probably a shrimp pertaining to the family Palaemonidae).

i. acamaya (a fresh-water shrimp of the genus *Macrobrachium*). Four different kinds are mentioned: akáčok, which is large, with stripes on the back; makašílʔ, smaller; makasákat, "a very thin one"; and makakíwi, with long antennae. These are considered a delicacy. They are placed alive on the flat baking plate, sprinkled with salt, and eaten at once.

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[13] Informants' comments are in quotation marks. Suggested identifications of fish and crustaceans appear in parentheses and are through the kindness of Mr. Milton J. Lindner. We collected specimens of *c* and *g* which, at Mr. Lindner's request, were determined by Mr. José Alvarez del Villar.

j. mejillón (spíyut) apparently is a fresh-water mussel, which is collected occasionally. It seldom is eaten and most of our friends have not sampled it.

Fishing techniques are limited and no use is made of traps, spears, or hooks. Although, under certain circumstances, the Totonac are distressingly handy with the machete, they do not spear fish with it as do the related Tepehua (Starr, p. 265). Today, fishing techniques are limited to the use of two kinds of nets, to poisons, and to the modern innovation of killing the fish by rockets.

There seems to be no generic Totonac term for net. The casting net (*atarraya*, ¢a·l) is popular today, but it is said that formerly a small dip net (pukílˀtaiˀ) (fig. 6) was more common. Other types of nets are not used, although informants describe seines along the Río Tecolutla. In fact, it is said that one Ignacio de la Cruz, an old resident of Tajín, now dead, knew how to make them. He used commercial hemp (*cáñamo*), purchasing both it and the lead weights in Papantla. He made the floats from the wood of the *chaca* (No. 228) or the *cedro* (No. 219); "they were about the size of a tortilla and about 1.5 cm. thick." Presumably his nets were sold outside of Tajín, for seines are impractical in the local arroyos, which are both small and littered.

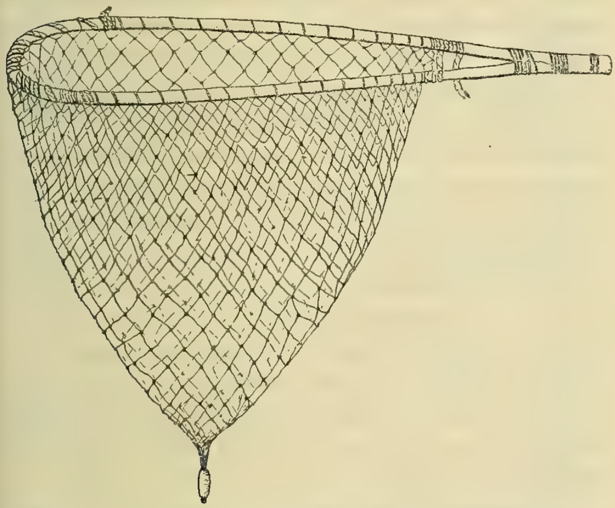

FIGURE 6.—Dip net. Said to have been purchased in Papantla some years ago. Distance from tip of handle to opposite point on frame, 68 cm.

Today, the dip net is so rare that we saw but one in the community (fig. 6), purchased some years before in Papantla. It is small, conical, with a single lead weight at the apex. The rim is lashed casually, with commercial string, to a bent stick frame.

The casting net generally is bought in Papantla, where various persons, particularly inmates of the jail, manufacture nets which sell from $15.00 to $30.00 pesos. In Tajín, netting seems confined to three men: Tirso Méndez, Miguel Aldama, from Chicontla, near Jopala; and Francisco Villanueva, a local product, who is a jack-of-all trades, known principally as a carpenter and religious singer (*cantor*). Formerly, a local fiber (*pita*, No. 224; cf. Mota y Escobar, p. 233) was used. Now, Don Francisco buys commercial twine; he avoids hemp (*cáñamo*), also available commercially, believing it too absorbent.

A casting net is roughly conical; when open, the rim is circular. The size is measured from the apex to the rim and is expressed in terms of *codos* (elbows), the distance from the tip of the middle finger to the elbow. A small net is of 3 *codos;* a large one, 4 to 5. About the rim of the net is affixed a great number of small, commercial lead weights, purchased in Papantla.

Roberto Williams accompanied a fishing party to an arroyo near Coatzintla; the account below is taken from his notes:

> A group of ten left early in the morning, each person carrying a shoulder bag of maguey fiber, which contained food and some old clothing. The party reached the site about 8 o'clock and stopped to eat, taking care to leave half the food for the noon meal. Breakfast past, each fisherman changed to old clothing, clean, but mended. All put on *calzones*, pyjama-like pants of white muslin, and one individual wore an old shirt as well.
>
> The fishermen chose a natural pool, roughly circular, of no great depth, and with virtually no current. Along one side, it was shallow; along the opposite, it was deeper. The pond was cut off completely downstream, by closing the outlet with the casting nets. They were arranged adjacent to one another, held upright by a series of sticks imbedded in the floor of the stream.
>
> The men started in the shallow part of the pool, where there were many aquatic plants. Forming a line, they moved from the center of the pond toward the edge, pushing the plants and refuse in advance. As they went, they removed broken lengths of bamboo from the bottom of the pool, checking each to see if it contained fish or shrimps. Upon reaching the bank, they looked further for fish, among the vegetation along the edges of the pool. Once this section of the pond was thoroughly inspected and freed of rubbish, the whole accumulation of plants and sticks was dragged to the outlet, where the nets were set up, and arranged there as reinforcement. The cleaning of the pool (called sweeping) continued until there was no

rubbish, at which time the nets were removed from their temporary position and subsequently were used as throwing nets.

Casting is described as follows:

> One end of a retrieving cord is attached to the apex of the net; its other terminates in a loop, which is slipped over the left wrist. The cord is doubled a couple of times and is held in the left hand, which also clutches the rim of the net. One of the lead weights is caught in the mouth; the right arm is passed beneath the net and the rim of the latter is grasped in the right hand. Finally, with the right arm, the net is thrown outward, in such manner that it falls open on the water, a meter or more from the fisherman. With the weight of the small leads, the net sinks and closes, imprisoning the fish which happen to be beneath it.

Today, fish poison is little used, and then "far from the houses." Nevertheless, Modesto González lists five uncultivated plants which are effective:

a. Camote amarillo (*Dioscorea*, No. 109). Its tuber is scraped or ground, then tossed into the water.

b. Camote blanco (*Dioscorea*, No. 147); use apparently the same as the preceding.

c. Spanish name unknown; in Totonac, laqašmấiyak (*Serjania*, No. 199). A vine, whose stem is hacked in pieces, 20 to 25 cm. long; these then are cracked with a heavy stick and tossed into the arroyo. The poison is said to have no effect on humans.

d. Bejuco de chile (*Salmea*, No. 49). The vine is cut in short lengths and thrown into the water. Again, not injurious to humans.

e. Palo de leche (*Sebastiana*, No. 99). The bark is slashed and the milky fluid which exudes is collected and dumped into the stream. Great care is taken, for this liquid is extremely irritating to the eyes; it is said, in fact, to attack the sight of the fish.

Unlike the other poisons, Don Modesto thinks that this one might be used to dispatch humans. He has heard that "when one is angry and wants to die," he gathers the milk of this tree. However, neither he nor other informants can give a specific case of suicide by this means.

Fishing luck must vary widely, but we know of one group of four which caught, between them, 87 *guapotes* and 1 *guavina*, and collected, as well, 3 shrimp. If the catch always were this numerous, fish might provide an important protein element in Totonac diet. But our impression is that its role is definitely minor—even though, as a special delicacy, dry fish occasionally is purchased in the Papantla market.

There is no fixed rule for the division of the catch. Antonio Bautista says that he and his friends put the fish in maguey fiber bags; when one bag is full, they use another. At the end of the day, they divide the largest fish equally among all participants; next, the smaller fish. The man who has had outstanding success generally gets a bit more than the others. Mauro Pérez and his friends likewise divide the catch equally. But Francisco Morales and his companions proceed differently: each one keeps what he catches personally; if he bags only one shrimp, that is his haul for the day. Lorenzo Xochigua once went with a party which was to fish by rocket. One man stood on the bank and tossed the rocket—but he came away empty-handed, for "his companions grabbed the fish so rapidly that none was left for him."

One with a cowlick at the back of his head invariably is a good fisherman and is invited frequently to accompany fishing parties. If a fisherman notices that one of his companions is blessed with such a cowlick, he attempts to tie his own little finger, unobserved, so that he too may share the luck. If several are fishing and only one seems to be successful, the others may examine him for a cowlick. If they find one at the back of his head, they tie his little finger with a vine or with the antenna of a shrimp, to destroy his luck. Outnumbered by his companions, he is obliged to submit. Lads new to fishing may be deceived. They allow their companions to tie their thumbs or little fingers in the belief that this move will bring good luck; on the contrary, the result is quite the opposite.

No fisherman will have luck—cowlick or not—if he carries with him a mirror, money, or a knife. However, he may bury these articles in the bank of the arroyo; or he may cover them with sand and wrap them in leaves. Thus enclosed, they may be carried in the shoulder bag without ill effect.

When one hopes that a rival may have poor luck, he goes ahead and tosses poison in the stream, so that the latecomer will find the fish already dead. Or he wears a ring—evidently the equivalent of tying his finger—and the other is unable to catch anything. Another alternative is to make the sign of the cross in the air, with the machete, along the road where the competitor is to pass; or, unobserved, to toss a fistful of sand on the shoulder of the rival. All these measures guarantee poor luck in fishing.

Attention also centers upon the net. Some tie the "teeth" of the shrimp to it, to insure a large catch. A new net often has a godfather (*padrino*), and generally he, not the owner, casts it the first time. Upon this occasion, an offering of food is tossed into the stream so that the legendary "owner of the water" (*el dueño del agua*) may grant luck in fishing. A concrete case witnessed by Roberto Williams follows:

> The owner of the new net removed from his shoulder bag a cornhusk, in which were wrapped: six wild miniature tomatoes, two chilis, a head of garlic, a small onion, and some leaves of *epazote* (No. 75). Generally squash seed (*pipián*) also is included.
>
> The owner of the net threw away the husk wrapping, gathered some dry leaves from the edge of the stream and, clutching this assortment, entered the water. He was accompanied by the godfather, who carried the net. The two men stood about 2 m. apart. The owner tossed his miscellaneous offering into the water, a meter in front of the godfather. When it had sunk, the *padrino* threw the new net over the same spot. He cast several times before turning the net over to the owner. Generally, the godfather is given half of the first catch.
>
> The owner of the net filled his mouth with water and blew a bit into the mouths of the first fish caught—to hasten their death, it is said. A meticulous fisherman performs this act with each fish he catches, regardless of whether or not the net is new. Some blow water into the mouths of the first fish of each catch; others make no such gesture.

A net may be "cured" on dry land, before the actual fishing excursion. The account of a local fishing enthusiast follows:

> With my first casting net, I did not "cure" it, but with my second, I did. My uncle asked when I was going to use the net for the first time, and I told him the following Sunday. He answered, "Then it must be cured, so that it will always catch fish. I shall cure it."
>
> My uncle went away, but came back later with a handful of squash seed (*pipián*), with seven chilis, and seven cloves of garlic. We went to the patio of the house and my uncle told me, "Stand as though you were in the arroyo and cast your net." He stood to one side, while I did as he told me. The moment I threw the net, he tossed the food from his hand in such a way that some of it caught in the net. I cleared the net, removing the squash seeds. Then my uncle told me that the chili and garlic were to protect the net from *mal viento* (literally, evil air; evil forces). And, "just as your net caught the squash seeds, so it will catch fish," he said.

WILD PLANTS

The Totonac make considerable use of their wild plant resources, in part for food, in part for other purposes. We collected between 300 and 400 herbarium specimens, about a fourth of which are considered curative—either because of medicinal or magical properties.

TOMATO AND CHILI

Of all the wild plant products, the two most important economically are the small tomato (*tomate*, *Lycopersicon*, No. 24) and the chili (*Capsicum*, No. 214). Both are of direct interest to every Totonac household, for they are used extensively in cooking and, moreover, are sold to considerable advantage by many families. These two plants appear in great quantity as volunteers in the maize fields. Some Totonac claim that they are not interested in adopting the plow, because it might endanger these two precious crops; and this may not be entirely a matter of rationalization.

The tomato is the miniature red form, about the size and shape of a marble; the small yellow type is unknown. There are two crops annually. The first begins in February and continues into April, when the maize starts to tassel; then "the yellow powder which falls from the corn is so strong that it dries the other plants in the field." However, once the ears of corn begin to form, the tomato sprouts anew, and by July is bearing again, ceasing once more in September.

The importance of the tomato as a local source of vitamins can scarcely be overestimated. Moreover, it brings a welcome cash income to those who have time and energy to gather the fruit. Many women, especially the elderly and the needy, collect every few days during the indicated seasons. Some of the fruit is sold in Tajín—to housewives who have no time to go to the fields; to those whose fields are too distant; or to those who are relatively prosperous. However, the bulk of the *tomates* is marketed in Papantla. The gatherers make frequent trips to town, each carrying on her head a wooden tray filled with the fruit. The wild tomato sells readily in Papantla because it has an excellent flavor and is much cheaper than the large, cultivated, commercial tomato shipped in for sale.

It is difficult to calculate either yield or proceeds from the wild tomato, because the fruit is collected in small quantities as it ripens, over a period of several weeks. Of our 35 families, 2 do not plant corn, hence have no field in which to collect; 2 claim not to gather the *tomate;* 14 collect for personal consumption; and 17 sell, in varying quantity. Most do not sell systematically, but collect the fruit each time they contemplate a trip to Papantla. However, Pablo González, whose wife and stepdaughters exploit the *tomate* very thoroughly, calculates that a maize field of 1 hectare produces 1.5 *almudes* (18 liters) of tomatoes a week, during the spring season of 3 months. He did not state whether or not the second harvest was equally plentiful, but he estimates a total annual income of over $300 pesos from the sales made by the women folk of his family. Don Pablo, incidentally, plants 3 hectares to corn, hence the household has more than average terrain from which to collect.

Others sell on much smaller scale and few have any notion of their total returns—especially since the price varies, according to supply and demand, from $0.60 to about $3.00 pesos the *almud* of 12 liters. Some say loftily that they sell only when the price exceeds $2.00 pesos. It is clear from the figures given by Don Pablo that a good many families could add materially to their annual budget if they were to exploit the wild tomato more systematically. Not all, of course, are in a position to do so. Those who have no maize field have no place to collect; and a woman who must care for assorted small children is not able to leave them sufficient time to go to Papantla to sell.

Some dry the *tomate* for their own use out of season. A frame of four forked sticks supports two crosspieces, on which rest a series of horizontal saplings or split bamboos, and on these, the fruit is spread to dry. A small fire may be built beneath the frame, to give added heat and to reduce the humidity.

The chili also is a miniature form, but extraordinarily potent. It is collected but once a year, beginning in April and continuing into May. Fresh or dried, it is one of the mainstays of the Totonac cuisine, and economically, it probably outranks the wild tomato in importance.

Concerning the exploitation of the wild chili, we have data from the same 35 families. Of them, 2 do not plant maize, hence have no cornfield and no source of supply; 8 claim not to gather the chili; 5 collect sufficient for home consumption; 15 gather, in addition, a surplus for sale. Since the chili generally is sold dry—at one fell swoop, and not piecemeal, as is the tomato—families are able to calculate proceeds more easily. Most sales range from $12 to $90 pesos the year.

However, one family claims to have realized $143 pesos, and two give figures in the vicinity of $600 pesos annually. One of the latter households is that of Pablo González, which is blessed with numerous offspring, including three grown stepdaughters. This family plants 3 hectares of maize and has a sizable territory from which to collect chili. The other case is quite different, for the family is in straitened circumstances. The man of the household is ailing and unable to work, but his elderly wife and decrepit godmother collect about 5 *fanegas* (720 liters) of chili between them, and claim to sell it at $10.00 pesos the *almud* of 12 liters.

In both the above cases, the price must be better than average to account for the alleged proceeds. Ordinarily, chili is sold from $4.00 to $10.00 pesos the *almud*, and $5.00 to $6.00 pesos is usual. In any event, it is clear that at least two families gain a considerable sum from the collection of wild chili, and others probably could increase their earnings through more systematic collection.

Chili is dried in the sun, and sometimes on a special frame such as that described above for the tomato. During rainy weather, the rack may be set up inside the dwelling.

As a general thing, women gather and sell both wild tomato and chili. However, when the latter is collected on sufficiently large scale so that it is marketed by the *fanega* (144 liters), the vendor generally is the man of the family.

OTHER WILD FOOD PLANTS

A limited amount of food comes from other wild plants. Some are eaten as greens (Nos. 5, 6, 29, 93, 104, 105, 286); others are used to make fermented beverages (Nos. 21, 252, 283). Of some, the pods or their contents are considered a delicacy by the youngsters (Nos. 38, 181, 203); and the seeds of another (No. 249) provide a vegetable oil.

Two fruits are collected in sufficient quantity to warrant marketing in Papantla. One is the *zapote cabello* (*Licania*, No. 90), produced by a tree of *monte alto*, which also is a semidomesticate, being planted occasionally in the maize field or in the patio of the house. The fruit is popular in Papantla; it ripens in November, hence is available for the brisk trade which accompanies the celebration of All Souls' Day.

Even more important is the *zapote chico* (*Achras*, No. 191), which grows either in *monte alto* or *monte bajo* and seems never to be planted deliberately. When young, it is said to bear in August; but if 25 or 30 years old, it produces fruit as early as April. As a rule, the fruit is cut green and is ripened artificially. A hole is dug and cornhusks burned in it. The fruit is placed in the pit, cold ash added, and the whole well covered. If the vendor is in a great rush to sell his wares, he may light a fire on top to speed ripening. Generally, both the *zapote cabello* and the *zapote chico* are sold by elderly women who are in need of supplementing their slim resources.

Other wild fruits are less exploited (pp. 162–163). A few (Nos. 37, 85, 315) are collected and occasionally are sold on very reduced scale—by the cupful, for example. Others (Nos. 10, 18, 21, 41, 51, 52, 57, 106, 156, 162, 163, 186, 187, 198, 207, 208, 218, 221, 283, 327) are gathered occasionally; children and adults nibble on them, but they are not a major item in the diet. Most fruits are eaten fresh, although some (Nos. 79, 98, 124, 172) seem invariably to be made into a preserve.

CHICLE AND RUBBER

The utility of wild plants is not limited to medicines and foods, and the *zapote chico* (No. 191) produces chicle, as well as fruit. A tree must be about 10 years old before it is tapped. Generally this takes place in the fall. Several men may decide to collect chicle; if they tap trees other than their own, they arrange the price with the owner in advance. Not every owner is interested, because if the tree is cut carelessly, it may die. However, if the operation is performed correctly, no evident damage results, and the yield of fruit continues as usual.

Starting at the base of the trunk, a series of diagonal, intersecting incisions (fig. 7) is cut with the machete. Virtually every *zapote chico* in Tajín has a ladder-work of scars, in the form of a giant featherstitch, running up the lower trunk. In the first, or lowest cut, a stiff leaf is placed, to serve as a canal. This may be the pulpy leaf of one of the bromelias (No. 301) or of an unidentified plant called λapatíe. Through this channel, the dribble of latex is carried to a bamboo on the ground. The bamboo is left at the foot of the tree for 4 days, at the end of which the latex is collected. To it is added the "milk" of the *ébano* (No. 152), *ábalo* (No. 349), or one of the figs (No. 221). The resulting mixture is boiled and poured into molds "as though it were brown sugar." The cakes are allowed to set and then are sold to stores in Papantla.

Chicle is not of major economic significance to the community, but, from time to time, individuals benefit from its sale. Of 39 families, only 3 have sold chicle; 1 derived $10 pesos, but the 2 others claim to have realized $400 and $540 pesos, respectively.

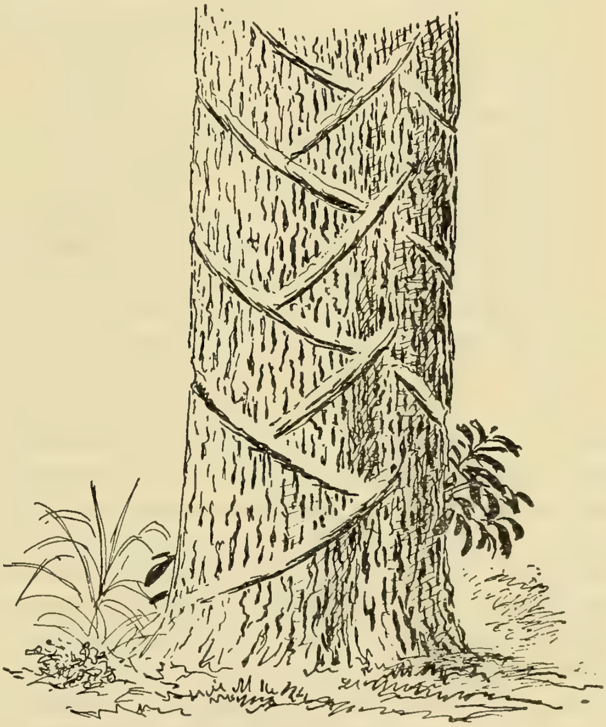
FIGURE 7.—*Zapote chico* tree tapped for chicle.

Rubber (*hule*, No. 345) is even less exploited. It is not cultivated in Tajín, although there are a number of trees, especially on the lands of Porfirio Morales and Arnulfo García. One informant has heard that rubber can be planted "when the fruits are ripe."

If one happens to have a tree, he taps it, and the proceeds come as a pleasant windfall. Of the same 39 families, only one derived income from rubber, and the total proceeds were $12 pesos. Tapping may take place at the end of 5 years, but "only in May, when the tree is leafless; otherwise, the latex will not run." A tree tapped for the first time is said to be cut spirally, starting well up the trunk and proceeding downward. However, on subsequent occasions, incisions are made in the form of a V. A bamboo at the base of the tree conducts the latex to a container.

Coagulation[14] takes place in a clay pot, without heating. The stem of a vine (No. 358) is cut in short pieces and crushed. Together with water, the pulp is added to the latex, whereupon the latter is said to coagulate. In this form, rubber is sold in Papantla at $40.00 to $45.00 pesos a "tin," which is a 5-gallon alcohol container. One tree generally produces about half a tin.

The general verdict is that "here we do nothing with rubber." Nevertheless, the Mexican rubber tree evidently grows in Tajín, without much encouragement or care, and it is not impossible that small-scale planting of commercial rubber (which, botanically, is quite distinct from the local tree) might profitably be incorporated into Totonac economy. It might relieve, in part, the dependence upon vanilla, whose yield is highly variable, and whose market price likewise fluctuates, but often is pegged so low by Papantla buyers that there is little profit in planting. Moreover, the vanilla crop fails not infrequently, owing to spring drought. In such a case, the only major cash crop on which the Totonac can depend is their sugarcane. The addition of rubber, if feasible, would make for a more diversified and more stable economy.

At present, there is widespread interest in establishing a permanent rubber industry in Mexico, and the Federal government is providing *ejido* communities farther south with disease-resistant clomes of the commercial rubber tree. The extension of the program to Tajín might be worthy of consideration. At least, it could do no harm to have local possibilities surveyed and, if they seem favorable, arrange for a small experimental planting.

ANIMAL HUSBANDRY

Livestock is limited. There is no head of cattle of any description in the entire community of Tajín, and there are no sheep and no goats. But more than half the families, not always the most prosperous, have a riding animal; and many have a pig or two. Fowl and bees are prominent in local economy.

The absence of cattle is noteworthy, for Tlahuanapa, the agrarian community which adjoins Tajín on the southeast, is said to have a fair dairy industry, and the Papantla zone in general is considered good cattle country. As a matter of fact, about 15 years ago, there were a few milk cows in Tajín. Josefina García is said to have had close to a dozen. Although there was no demand for the milk, it was possible to sell a certain amount of cheese. However, two of her cows died from snake bite; another, from some undefined illness. The remaining animals were sold, and since that time there have been no cattle in Tajín. For this, various reasons are given. Santiago Simbrón thinks there is not sufficient water during the spring. Doña Josefina herself says that cattle result in complications with one's neighbors. Since it is not customary to fence fields, livestock is likely to wander into the milpa—and complaints, bickerings, and damages result without fail.

DONKEYS, HORSES, MULES

The consensus of opinion is uniform: as between the donkey, horse, and mule, the mule is by far the most satisfactory, as well as the most expensive to purchase.

The donkey (*burro*) is of limited utility. It serves to haul cane from the field to the mill; it is useful in transporting firewood; and it can serve as a mount. But it mires in deep mud, hence during much of the year is of relatively little use, either for cargo or for riding.

The horse is considered a luxury item, since it is used principally for riding and has far less resistance than a mule. Some pack cargo on their horses—but they are not first-class animals in the first place, and in the second, they do not improve with such use.

A horse, not in its prime, costs around $200 pesos. At that price, Santiago Simbrón sold his, and at the same price, he bought another, of about the same category. A really good mount runs between $350 and $400 pesos—which few families can afford to invest in an animal which does little but transport its owner in style to Papantla of a Sunday. Horses are not named, but some receive rather surprising consideration. We were told by Rutilio Olmos that if we wished to borrow his beast, we should request it a week in advance, "so that the horse might know where it was going."

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[14] In the midnineteenth century, Bausa (p. 404) reports the use in Papantla of the liana *sarnoso* to coagulate rubber; this presumably is our No. 305.

A good mule is equally useful as a mount and as a beast of burden. It pushes effectively through the mud; it is able to carry heavy loads; and when hitched to the sugar mill, it is more efficient than a horse. Thirty years is considered the average life of a good mule, although Francisco Xochigua had one which allegedly endured 38 years. This extraordinary longevity is attributed to the fact that the animal was not laden until it was 4 years old.

A good mule represents a considerable capital investment. One broken costs between $600 and $800 pesos; not broken, about half that price, but an additional $100 pesos must be paid someone in Papantla who will train the animal. A mule may be ruined in the breaking; it may become timid and skittish or it may become "mean." Accordingly, it is a great gamble to buy an unbroken mule. The Totonac are aware that it is false economy, yet because of the reduced cost, it is more popular to take a chance on an unbroken animal.

On the whole, those who own burros are reconciled to them, simply because they cannot afford a more expensive animal; most of those who have horses would prefer mules, were it not for the high initial cost; with few exceptions, the horses are not prepossessing. Generally, those who have mules are of better than average means.

Animals are surprisingly plentiful and indicate that the Tajín Totonac are prosperous when compared to other indigenous groups in Mexico. Probably the average is nearly one animal per family. Our count does not include all households in the community, but we have information from 44, of which 34 live in the *fundo legal*. It cannot be said flatly that the group is entirely representative, although we believe it to be; certainly, it includes some of the most prosperous, as well as some of the most poverty-stricken families of the community. For convenience in reference, the households have been numbered.

Of the total of 44 households, 18 have neither riding nor draft animal; with this group is one family (No. 12) generally considered affluent. Among the remaining 26 households, animals are distributed as follows:

Family No.:	*Burros*	*Horses*	*Mules*	*Total animals*
1	0	1	0	1
2	0	0	2	2
3	0	1	0	1
4	0	0	1	1
6	1	1	1	3
9	1	0	0	1
11	1	2	0	3
14	0	0	1	1
17	1	2	0	3
19	0	2	0	2
21	0	1	0	1
23	3	0	0	3
24	0	0	1	1
25	0	1	1	2
27	0	2	1	3
28	0	1	0	1
29	0	1	0	1
31	1	0	0	1
33	0	1	0	1
35	1	0	0	1
36	0	1	0	1
37	0	0	1	1
39	0	0	1	1
41	0	2	2	4
43	0	1	0	1
44	0	1	0	1
Total	9	21	12	42

Of these 26 families, 17 have 1 beast each; but 3 families have 2; 5 have 3; and 1 has 4. Of the households with multiple animals, three (Nos. 6, 11, 25) run local stores and use their beasts to transport merchandise. One family (No. 23), close to indigent, has three burros temporarily. Originally, it owned a female donkey, which produced two offspring. Since our count was taken, one of the progeny has been sold and the other given to a son-in-law in Ojital, so that the family again is reduced to one beast.

There is virtually no local breeding of animals. From time to time, they are sold locally in Tajín, or exchanges are arranged between individual owners. Most purchases, however, are made from dealers who come from Papantla. These vendors accept both cash and produce, such as timber, maize, vanilla, pigs, and turkeys; they also receive other draft or riding animals as part payment.

In Tajín, animals require a minimum of care. Generally, they are tethered beneath a tree, near the house. A few families have a corral of sorts which consists of an enclosure fenced by vertical posts, the latter connected by horizontal bars.

The initial cost of a riding or draft animal is the principal one, and maintenance is slight. Animals may be taken to an abandoned maize field to pasture, or fodder is cut and brought home daily. The owner himself may return from his milpa with greens for the animal, or the chore may be assigned a half-grown boy of the household. In season, green maize stalks and leaves sometimes are given the beasts. The dry tassel is cut for them, but the dry plant never is fed animals in Tajín, as in other parts of Mexico, presumably because green vegetation is abundant throughout the year.

Many plants are considered suitable for fodder, but our impression is that four are most popular: *ramón*, *ojite*, and two cultivated grasses, *zacate paral* and *zacate guinea* (Appendix C, Nos. 79, 98, 243, 245, respectively). It is said that in nearby Gildardo Muñoz, few Totonac bother to bring fodder to their animals; instead, they tether them along the "road," where there is a considerable fringe of grassland.

In food consumption, there is no distinction between donkeys, horses, and mules. Some animals are maintained exclusively on green fodder; others are fed maize in varying quantities. Below is a summary of the data provided by 20 of the 26 families which own animals. In *c–h*, the reckoning is in terms of liters daily for each animal. Where we have converted, for the sake of uniformity, the informants' statements follow, in quotation marks.

	Number of families
a. Exclusively green fodder; no corn whatsoever	5
b. Generally green fodder; corn occasionally, infrequently	3
c. Estimate: ca. 0.28–0.36 liters of corn daily ("5 liters every two weeks"; and "1 liter twice a week")	2
d. Estimate: ca. 0.75 liters of corn daily ("3 liters daily, among 4 animals")	1
e. Estimate: 1 liter daily ("2 liters every other day")	1
f. Estimate: ca. 1.5 liters daily ("3 liters to each animal, 3 to 4 times a week"; and "3 liters every 2 days")	2
g. 2 liters daily, per animal	1
h. 3 liters daily, per animal	5

It is evident from the foregoing that a good many families spend virtually no maize on their riding and draft animals. Some, when asked, reply that animals are given corn if there is any to spare; if not, they do very well on green fodder. Under the circumstances, the only drain on a family of poor means is the bother of cutting forage.

Nor do the Totonac spend much on trappings for their animals. Old gunny sacks serve as sweat blankets. Saddles, purchased in Papantla, usually give years of service and are generously reinforced with odd bits of wire, rope, and string for many years before they are discarded. Needless to say, the high humidity does not contribute to the preservation of leather. The pack saddle is not distinctive; here, as in many parts of Mexico, it is a simple wooden frame, which consists of an X-shaped piece, fore and aft, connected by a longitudinal strip on the lower half of either side.

Riding and draft animals are relatively plentiful in Tajín, yet they are not an integral part of the culture, and the latter is literally pedestrian. Most people travel on foot, although to ride a horse or a mule undoubtedly gives one a certain prestige and personal satisfaction. Without exception, women do not ride. Often the head of the family goes to Papantla, proudly astride his best mount, while his wife and daughters accompany him on foot.

Agriculture is essentially independent of draft animals, for the plow and the cart are not used. However, beasts of burden haul produce to Papantla for sale. And animals are used in connection with (the post-Conquest) cane growing—both to haul the cut cane from the field to the mill, and to provide traction for the latter.

There is no one in Tajín who can shoe a horse; it is necessary to go to Papantla for such service. There are no muleteers in the entire community and extremely few Totonac who can load an animal expertly. Moreover, there are few dashing riders, and perhaps the chief requisite of a mount is that he be able to bring his master, in an advanced state of intoxication, back to home base in Tajín, following a Sunday in Papantla. Finally, there is virtually no veterinary lore connected with riding and draft animals.[15]

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[15] One remedy is prepared for animals which suffer from *torzón* (intestinal and urinary stoppage). A plant called *epazote de la mula* (Appendix C, No. 74) is boiled; the resulting liquid is put in a bottle from which the beast is forced to drink.

A horse that stumbles chronically is burned with a hot iron at the base of each ear. One whose feet interfere similarly is burned on each of the upper back legs.

The horse of Rutilio Olmos either wandered from home or was stolen. When finally it was found, it had a dislocated foot. The owner tried massage ineffectually, but confessed that his hope was that the animal "might cure itself alone."

SWINE

Hog raising is a greater drain on the maize supply, and fewer families have swine than have riding and pack animals; moreover, the number per capita is considerably less. Our information comes from 40 of the 44 families mentioned above. Of them, 21 have no swine; among the remaining 19, hogs are distributed as follows:

Family No:	*Number of pigs*	*Pigpen*
1	[1] 6	×
2	1	×
3	1	×
5	1	-------
9	2	-------
11	2	(2) ×
16	1	-------
19	1	-------
21	1	×
22	[3] 1	(4)
27	1	-------
30	[5] 1	-------
31	1	-------
33	2	×
34	1	×
36	2	-------
39	2	×
41	2	×
44	2	-------
Total	31	

[1] 3 sows, 3 small ones.
[2] 2 pigpens.
[3] Small, a recent gift.
[4] No pigpen as such; the hog is kept in the granary.
[5] Small.

Three kinds of pigs are known to the Totonac: (*a*) cuinos (makłtintilí pašniʔ, bald pig), of which there is none in Tajín; (*b*) *cochinos grandes* (lanqaʔ pašniʔ, large pig), the most frequent in Tajín; and (*c*) *polinche*, another large form, said to yield "the most lard of all. There once was one predominantly of this breed in Tajín, but even it was of mixed blood."

Although pigs are not treated with any evident affection, in at least one household they attain the dignity of personal names. One little female porker is called La Guaracha (the leather sandal), and a young male is known as Juan Charrasqueado (the name of a current popular song).

There is a certain amount of local breeding of swine—assuredly more than of horses. The owner of a sow arranges to take her to the boar. To the owner of the latter, either he pays $5.00 pesos or promises him the first choice among the progeny. It is considered "more convenient" to pay the $5.00 pesos and thus avoid a dispute later.

A sow is given maize gruel, with lard, to stimulate the flow of milk; if, by any chance, her supply fails, the offspring are reared on maize gruel. For the first 8 days after birth, the pigs suckle. Then they begin to look for plants, and at 2 weeks, they are able to eat corn.

Swine run free most of the time; "that is the way they become fat, by walking around." However, if the owner's fields are adjacent, the pigs are tethered. Sometimes they burrow and make a shelter of sorts for themselves along the edge of the house clearing. When there are two or more, a special pen and shelter generally are built, and irrespective of number, some sort of protection is necessary during the heavy summer rains. If the household boasts only one pig, it may sleep in a corner of the family dwelling. Ordinarily, a sow with young is kept in an enclosure. Once the little ones begin to put on weight they are released; by this time, they have little tendency to wander very far; "they think only of eating."

At the time of our count, about half the families with pigs had special shelters (*chiqueros*) for them; one (No. 11), in fact, had two. These belong to one of the local storekeepers; although at the moment he had only two pigs, ordinarily he maintains more. The pigpen usually is a small gabled building with walls of bamboo and roof of thatch (pl. 17, *e*) (p. 203).

It is difficult to estimate the cost of maintaining a pig. In the first place, food consumption varies greatly, according to the size of the animal. In the second place, although the principal food is maize, supplementary foods vary considerably in quantity, from family to family. All pigs forage, but some have better opportunities than others.

Unfortunately, there is no equivalent of the green fodder on which riding and cargo animals subsist, and little greenery is cut for the pigs. Sometimes the vine of the *calabaza* (Appendix C, No. 273) grows out of bounds and is believed to keep the maize from developing properly; accordingly, parts of it are pulled out and fed green to the hogs. An overluxuriant sweetpotato vine (Appendix C, No. 260) also may be cut and brought home to them. Kitchen refuse is relatively slight. Left-over tortillas, when there are any, are given the pigs. Green beans are shelled, for the seed alone is considered fit for human consumption; the remainder of the bean is boiled and fed to the swine. Bananas and *calabazas* also are given them, "when there are any to spare."

Owing to the differences in food requirements and in the variability of the nonmaize feeding, it is pretty hard to say just how much corn is given a pig. A small one may eat as little as half a liter a day; a larger one, between 1.5 and 3 liters. But a hog which is being fattened is given about 6 liters daily—eight times the average daily consumption of an adult human being in Tajín. Not all maize is equally good for a swine. Some raise yellow corn especially for fattening pigs. However, Ana Méndez reports that her little porker developed diarrhea when she gave it to him; she also claims that a hog which eats a certain kind of red maize (iłkón) never will fatten. She relies exclusively on white corn.

When a pig is to be fattened, it is given salt water daily, or in its stead, *tequesquite*, an alkali, collected on the shores of dry lakes, and sold in Papantla. "A good pig" is fattened in 8 months; "a lazy one" requires a full year.

At least one resident of Tajín, Magdaleno Méndez, is able to castrate. For a female, he charges $1.50 pesos; for a male, $1.00. The operation must be performed either when the moon is full or when it is new. The cut is made with a sharp knife, then is sewn with needle and thread, and rubbed with ash. Sometimes flies lay their eggs in the wound, and these are killed by applying the "milk" from a tree described as similar to one of the figs (Appendix C, No. 222). Following castration, the animal is tethered. If, after 4 days, the wound has healed, the pig is released. It is fed leaves of the sweetpotato vine to stimulate appetite, and shortly thereafter, begins to eat "everything."

Hogs are not inexpensive; a young one costs from $30 to $50 pesos; a large one, several hundred. They are purchased in Tajín or in Papantla. A Totonac who sells a pig often cuts the tip of the tail and sticks it for safekeeping between the upright poles which form the wall of the house, so that "the breed may not terminate."

Other than fowl, pork is the only meat which is available with any frequency. A medium-sized animal, still not sufficiently fat for the market, may be killed for home consumption. Quite often, well-fattened pigs are butchered locally; the owner circulates among neighboring families, taking orders days in advance, to be sure that none of the meat will be left on his hands.

To slaughter a pig, two men are necessary, but generally there is a sizable gathering of interested male relatives. Since the whole business is within the family, there is no question of payment. Slaughter takes place before dawn. The front feet of the animal are tied together first; the same cord is passed to the rear feet, which then are tied. The hog is placed on its left side, with its head over the edge of a pit which has been dug in the ground. One of the men sits astride the animal and thrusts a knife into the neck, in such manner that the tip reaches the heart. The blood is caught in a vessel which is placed in the pit.

Immediately thereafter, the carcass is shoved over the pit, being supported on a series of poles. And within the hole, a rapid fire of paper and dry cornhusks is lighted. In this quick blaze, the hog is thoroughly singed. It is not treated with hot water, although this is known to be the practice about Tuxpan. Next, the carcass is lifted to a table, where the skin is well washed and scraped. A ventral cut is made and the internal organs removed. The inner side of the legs are slit and the skin is peeled off, together with the adhering fat. Once stripped of its cushion of fat and of its skin, the carcass is butchered; by early morning, meat is ready for sale.

Certain cuts are recognized: legs, ribs, and spine. Those who buy in considerably quantity may take such a cut; but others, who want less meat, purchase somewhat amorphous hunks. All meat is sold at two standard rates; with bone, at $3.00 pesos the kilogram; and without bone, at $4.00 or $4.50 pesos—slightly less than current Papantla prices.

The fat is separated from the skin; the latter is cut in strips; the fat, in small squares. Both, together with water and salt, are boiled in a large copper vat (*paila*). Not every copper vessel will serve, only one whose interior has a tin wash; otherwise the flavor is disagreeable. A few households have a special copper container destined exclusively for the preparation of lard. This is loaned free of charge to relatives, but an outsider generally pays $2.50 pesos. Lard sells at about $5.00 pesos the kilogram; again, slightly less than the Papantla price. Certain individuals have special skill in preparing cracklings "that are neither too greasy nor too dry." Some hours after the meat has been sold, cracklings are ready, and the demand generally exceeds the supply.

The large intestine, well scraped and washed with lime (*cal*) and lime (*limón*) juice, is used to make blood sausage. The small intestines are fed to the dogs.

FOWL

Since early times, poultry apparently has been important among the Totonac. In 1580, both turkeys (*gallinas de la tierra*) and chickens (*gallinas de Castilla*) were abundant in the Totonac pueblo of Tlacolulan, near Jalapa (Paso y Troncoso 5:109). As early as 1579, the raising of fowl was significant economically in the Totonac pueblo of Misantla, and turkeys and chickens were sold in Veracruz, 20 leagues distant. It is said that no matter how poor an Indian, each year he raised more than 40 fowl (Relación de Misantla). Poultry also was an important article of commerce in Papantla in the late sixteenth century (Relación de Papantla).

Today, virtually every household has either chickens or chickens and turkeys; few have ducks or pigeons. The duck is of interest since it appears to be the Muscovy type, hence an aboriginal domesticate.

Chickens and turkeys are important economically because of their food and their sale value. Socially, they are significant inasmuch as both the birds and the eggs are considered the property of the woman. One who was asked concerning her personal possessions, mentioned only the milling stone (*metate*) and an assortment of poultry; another listed two hives of bees and various fowl. Of a neighbor woman, it is said, with righteous feminine indignation, "She is not the owner of the eggs of her house; she cannot sell a chicken or even an egg without permission of her husband."

A man occasionally remarks that "chickens belong to the woman because she raises them"; at the same time, he is not above adding that it is he who cultivates the maize which they are fed. If a woman has no poultry, her husband unquestionably gives the money with which she may buy a hen or chicks, and this she is not expected to return. But if she already has a hen and wants another, she must pay for it from the proceeds of her egg sales.

Female ownership probably is more theoretical than actual. Although no man would think of killing or of selling a chicken or a turkey without his wife's consent, a woman seldom sells poultry without consulting her husband. Should she sell in his absence, she reports the transaction when he returns home; "if she says nothing he is angry." However, the woman generally receives the money from the sale of both fowl and eggs. Generally, she is expected to spend it chiefly on kitchen supplies. Any surplus may be used to purchase special delicacies, such as "meat, cracklings, or bread," or it may be spent on clothing and trinkets. In needy households, the husband may dispose of the money; we know one family which places the entire proceeds from the poultry in a "kitty," from which fund the woman is expected to buy the bulk of the food, excepting the maize, for the whole family.

Poultry is popular. Of the 39 families for whom we have information, all but 2 keep fowl; and these 2 households happen to consist each of a lone individual. Of the remaining 37 families, 21 have chickens, and 16 have both chickens and turkeys; none raises turkeys alone. Numerically, chickens are more than 10 times as plentiful as turkeys. Our 39 families have a total of 124 turkeys, irrespective of sex and age; the corresponding total for chickens is 1,652.[16]

Both chickens and turkeys receive pretty much the same care. Young chicks are fed maize dough (*masa*), and for young turkeys, cooked greens are added to the maize paste;[17] larger birds live chiefly on dry corn. A turkey is said to eat considerably more than a chicken, and the latter forages, while the turkey does not. We can give no relative figures because our census forms call for a lump estimate of the maize fed to poultry.

Feeding estimates vary widely. The lowest extreme is found among a family which gives its 22 half-grown and full-sized birds only 1 liter of maize daily.[18] In contrast, another family with four birds, feeds them 6 liters a day; and another with two, gives the pair 3 liters. We have data for 29 families; on an average, they give 1 liter of maize daily to every 6.1 birds—an allotment which seems reasonable.

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[16] This figure probably is a bit too high. Data given by informants seemed reasonable, with one exception, that of a household which claimed to have 200 hens. Inasmuch as the property was not extensive and we had not noticed a major concentration of fowl, we asked a second time, and were given the same figure. However, neighbors say that this family probably has nearer 50 than 200 hens.

[17] This probably is an old culture trait. According to Sahagún (3:190), turkeys ". . . comen maíz mojado cuando pequeñas, y también bledos cocidos y molidos y otras hierbas . . ."

In Tzintzuntzan, chicks also are fed maize dough (Foster, 1948, p. 117), but this practice is not universal in Mexico today. In parts of Jalisco, chicks are given broken, dry corn, and in the highlands of Veracruz, about Altotonga, they are raised on broken rice and sesame (information respectively from José María Corona and María Cristina Alvarez).

Nests for setting hens are made of dry banana leaves or cornhusks, often directly on the earth floor of the dwelling and preferably beneath a bench, where they are out of the way. The most popular nest is one arranged within a large sherd of a clay jar. For a turkey hen the curve of the jar should be smaller than for a chicken, for "if the eggs roll from beneath the body, the turkey makes no effort to collect them." The sherd may sit directly on the floor, and we saw one placed, at least during the day, on the platform bed of the dwelling. For a turkey, invariably the nest is inside the house, otherwise she will abandon the eggs. Ana Méndez places it in one corner of the house and leans short lengths of bamboo diagonally against the house wall, to form a shelter over the nest. For chickens, the sherd (or a wooden box, in its stead) often is outside, on a frame supported by four forked sticks set in the ground. Each nest has its individual frame, generally against the house wall, where the eaves give some protection from sun and rain.

Many families provide no particular shelter for their fowl; of the 39 households mentioned above, only 8 have poultry houses. Grown birds ordinarily sleep out of doors, on the branches of a tree adjacent to the family dwelling. Here they are exposed to the inroads of raccoons and opossums and, moreover, "if a cloudburst comes during the night, they may fall from the tree and drown." During the rainy season, a special shelter generally is provided for hens with chicks. There are two principal kinds. One is a simple hut made of poles and bamboo, with a forked stick frame and with a thatched roof which may be either gabled or of one shed (pl. 17, *b*). More frequently a conical shelter is formed by leaning short lengths of bamboo against the trunk of a tree or against a vertical post (pl. 17, *a*). One or two lengths of bamboo are removed during the day; at night, the fowl are chased into the hut and the bamboo replaced. Probably this structure gives more protection from prowling beasts than it does from the rain. Occasionally a pen is built, with a flat palm roof, to provide shade for fowl during the spring months. Ordinarily, all poultry wanders freely, at least by day.

CHICKENS

We do not know in what year the Old World domestic fowl was introduced in the Papantla area, but it must have been accepted with alacrity by a people already used to turkey-raising because of a number of practical advantages: it is more hardy, eats less, and matures more rapidly.

A hen with no tail is supposed to be a good layer, but since the local stock is not bred for laying, most hens attempt to set with monotonous frequency. As a result, practically every Totonac woman is a chicken breeder. If a hen abandons the eggs, she is replaced by another, sometimes borrowed; in that case, the borrowed bird is returned, accompanied by one or two chicks, according to the size of the brood. The same arrangement holds if a rooster is borrowed, for not every family has a cock. Of our 37 families with chickens, 11 have no roosters, although one claims 40 hens. Among the remaining families, the ratio of cocks is highly variable. In one household, they almost equal the hens in number; at the other extreme, the ratio is 1 rooster per 50 hens. The average is about 1 to 7.

Eggs are inspected against a strong light, to determine whether or not they are fertile. By day, they are held against the sun which passes between the upright poles of the house wall; by night, they are held in front of a lighted candle. If the egg contains a dark spot (called *coronita*, little crown), it is suitable for hatching.

The number of eggs selected ranges from 8 to 15, according to the size of the hen. February is the best month for hatching; "then the cold weather is past and fewer chicks die." However, it is advisable not to set a hen during very hot weather, for the eggs "turn to water and crack." The moon has no bearing on the success of the enterprise, but eggs which are set on Sunday produce only male chicks; of the other days of the week, all are equally auspicious.

Some believe that a pregnant woman will have little success with chicks. It is preferable to set a hen in the late evening, when the laundry for the day has been done; if clothing is washed immediately after the hen is set, the eggs will turn to water. Similarly, if one purchases eggs for hatching and must pass an arroyo on the return trail, it is necessary to "cure" the eggs. Dry tobacco and green leaves pulled from any tree at hand are placed in a container with the eggs, and over all, a bit of ash is sprinkled. Thus protected, the eggs may be carried across the arroyo undamaged.

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[18] A neighbor woman notes that this family complains frequently that its poultry has been stolen. Probably, she says, the birds are insufficiently fed and so wander from home.

Care is taken that a cock have no access to a setting hen, for fear the eggs will spoil. However, there is no technique for preventing a hen from breaking the eggs or from eating them. At the moment the chickens are hatched, it is essential that no one sweep the premises and that there be no family bickerings; either may cause malformation: feet with five toes instead of four, "clubfootedness," etc.

Once the chicks are hatched, the shells are sprinkled with ash and are left at a fork in the trail, "to confuse animals of prey." However, not everyone thus disposes of the shells. Agustina Méndez says that she "plants" hers; that is, she buries them so that the hens will not wander far from the house and thus run greater risk from preying animals. To protect eggs and chicks from dogs, a small nick is made in the ears and the tail of the dog; and as protection against hogs, alcohol is poured into the mouth of the pig; "it becomes drunk and later eats nothing."

A hen with chicks is tethered close to the house for a week or more, in the hope that the brood may escape the *aradores*, minute red insects which may cause death. A chick infested with these pests, has the head and tail singed with a burning splinter and the wing feathers cut; or the chick is bathed in salt water.

For the first month, young chickens are fed mostly maize dough. During Holy Week, they become very fretful ("*se ponen muy chillones*"). At this time the *laurel* (Appendix C, No. 130) is in bloom and, as a remedy, its flower is mixed with the dough. One informant thinks this preparation gives protection against the *aradores*. Occasionally chicks are given rice; they also are fed the wood borer known as *comején*, but the latter delicacy generally is reserved for the young turkeys. Grown chickens are fed twice a day and are given the entire maize kernel; a hen fed recently harvested corn will cease laying.

Chickens thrive in Tajín, but during winter, young ones may die of the cold. The two commonest diseases are sta·tatˀka, a fever, and paksui·t, chicken pox (?) Other hazards are animals, such as the hawk, opossum, raccoon, lynx (?) (*onza*), and fox.

Chicken is eaten from time to time, but not very frequently; it and pork are the two meats which appear most commonly in the Tajín diet. To kill a chicken, the bird is held securely against the thigh, feet upward, and the head is given a sharp downward jerk.

A young cock sells for somewhat less than a pullet. If the latter brings, for example, $1.50 pesos, a cock will be worth $1.00 peso. But once grown, a cock (puyu; presumably from the Spanish *pollo*) consistently sells for more than a hen (stilan). Prices range from $2.50 to $3.50 or $4.00 pesos. Sometimes a vendor asks as much as $5.00 pesos, but with scant hope of extracting such a price without taking his bird to Papantla for sale.

To carry a chicken from one place to another, it is tucked under the arm, usually with the feet tied. Some carry a bird in the maguey fiber shoulder bag. One of the side seams is ripped a few inches and through this opening the head of the fowl protrudes.

When a rooster is either killed or sold, its feet are cut and are hung on the kitchen wall or are placed on a hanging shelf in the kitchen. The feet of immature cocks and of hens are not preserved. Interestingly enough, one informant observes this custom for turkeys but not for chickens. The objective is "*para que no se acabe la cría*," so that the strain may not end. For the same reason, a couple of feathers are plucked from the chicken of either sex when it is killed or sold, and in some kitchens sizable bundles of feathers are to be seen. Moreover, when a vendor chooses between two birds, that which does not meet with his approval is rubbed with ash and a few grains of salt are inserted in the beak; otherwise it may be eaten by a predatory animal.

Eggs bring a higher price in Papantla than in Tajín—often double; and, as an aside, the price in Papantla is about half that of Mexico City. There is considerable seasonal variation; beginning in Lent, eggs are abundant and the price drops. Ordinarily, eggs are plentiful in Tajín, although some families do not have a sufficient surplus to sell; in some households, they are eaten almost daily. The sale of both eggs and chickens is a significant item in many family budgets, and in case of emergency a woman invariably can raise a few pesos by selling her poultry.

Eggs which are sold are wrapped in pairs. One is placed in the concavity of the butt of a cornhusk, with the other immediately above; the tip of the leaf is folded over and tied in place with a narrow strip of husk.

TURKEYS

Not every family keeps turkeys, because they are delicate, being sensitive to cold, to moisture, and to disease. Accordingly, the capital investment often is lost. As one man puts it, "We keep no turkeys because they die right away."

The turkey, male or female, is called čawilaˀ Two kinds are distinguished—the dark and the "white," the latter very light, but mottled with tan. The "white" is preferable because it can be fattened in the course of 10 or 12 months, whereas a dark turkey "eats a great deal" and requires, at the very least, a year for fattening. However, the dark is much more plentiful than the light, and although Ana Méndez prefers the latter and has purchased eggs of this stock for her hen, she has had no success in hatching them.

Spring is the best time to breed turkeys, because there is no danger of cold weather. The hen either lays or is given 12 to 15 eggs, which hatch in about a month. Because of the thick shell, turkey eggs are not tested against the light for fertility.

For a week after the chicks hatch the hen is tied, so that she and the little ones may avoid the *aradores*, the pest mentioned previously. Food requirements of young turkeys are exacting. They are given *comején*, a white wood borer, which infests trees; great hunks of the trunk are cut and brought home, and from these the birds pick the insects. They are fed maize dough also, but with it are ground certain boiled greens—such as *yerba mora*, *quelite* (Appendix C, Nos. 6, 29), and an unidentified plant called lilišiput. Lacking these greens, the chicks do not grow. Turkeys raised by a chicken are healthier, because the latter is active and looks for food for her charges, whereas the mother turkey "only looks upward."

Even with grown turkeys one must take care with their food. Ana Méndez happened to have an excess of bananas (*plátanos morados*) on hand and fed them to her turkeys. They suffered from indigestion and lay down and refused to move. Doña Anita felt their crops and they were hard. Accordingly, she cut their wings and fed them maize dough with lime juice. Upon another occasion, the crop of one of her turkeys swelled with "air" because "the hens pecked him and he was annoyed." To cure him, she opened the crop with the thorn of an orange tree; pressing lightly, she extracted the air, and the turkey recovered.

A number of magical beliefs were recorded, but fewer than those associated with chickens. Probably the latter apply equally to turkeys, but since chickens are more plentiful conversation centered most frequently upon them. The same disposition is made of the egg shells after the young have hatched and, similarly, there are special observances when a rooster is sold or killed. If a hen is attempting to hatch his progeny, the claws of the roosters are tied to the wall or are stuck between the uprights which form the wall, and feathers from his breast are plucked and are placed with the setting hen. Otherwise, the chicks will not hatch. For an immature turkey cock no such gestures are necessary. However, if a vendor selects one turkey and spurns another, a feather is removed from the latter and saved.

Turkeys are too large to be killed on the thigh; instead, they are hung from a tree and the neck yanked downward. Turkey in *mole* sauce (p. 158) is a standard feast dish, and the demand is sprightly; moreover, nearby Papantla offers a ready market. Accordingly, turkeys are relatively higher priced than chickens and, incredibly, they bring in Tajín pecisely the same price as in Mexico City, about $25.00 pesos.

OTHER FOWL

The duck (patuš; from Spanish *pato* (?)) is of little importance in Tajín and is of interest chiefly because it is the Muscovy type,[19] which is a

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[19] Both males and females have the diagnostic patch of "red, rough, carunculated skin" on the head, although we saw one drake with it black instead of red. All have the characteristic horizontal, low-swung axis, although the difference in size between

New World domesticate, native to South America (Lee and Sheppard, p. 4). A post-Cortesian introduction among the Totonac is suggested by the apparent Spanish derivation of the "native" term.

In Talaxca, north of Papantla, the Totonac are said to eat the eggs, yet the bird is regarded by María Loreto as something of a luxury. Its chief function is to consume the ants (*arrieras*) which damage the gardens, and other pest, the *sonsopepe*, described as similar to a cockroach.

In Tajín, it is said that duck may be served with *mole* sauce and that the eggs either are boiled or fried; "they turn somewhat green when cooked in fat." However, we know only three households with ducks and none seems to exploit them. José María García has the largest number, with two drakes, about a dozen females, and a large brood of young. They eat "raw maize, mud, and small fish from the arroyo." Some 10 years ago, Don José María bought the ducks from Macario López, of Ojital. Although he has maintained the stock, he makes absolutely no use either of meat or eggs and keeps the ducks "only because he likes them." Similarly, Emilia Morales has an elderly, decrepit female, which he likewise appears to keep exclusively for sentimental reasons.

As with other fowl, it is customary to remove a feather when a duck is sold or killed.

Pigeons are even scarcer than ducks. We know of only two households, each with a handful. Some years ago, a dovecote was built at the school and the teacher attempted to encourage the breeding of the birds, with little success. A local superstition associates them with bad luck:[20] "One earns no money if he has doves in the house; or his wife may leave him; or he may die."

Although not domesticated, bird pets may be mentioned here. Sometimes young wild doves are captured in the nest and are brought home to be reared in a cane cage; "many die." The mockingbird is said not to survive in captivity. Occasionally, the oriole (*calandria*) and a parrot (*cotorra*) are mentioned as pets, but we have seen none. An ancient reference suggests that the coastal Totonac kept parrots on large scale, for among the gifts presented by "Quiahuixtlan" to representatives of the Mexican ruler, were "many birds of *papagayos*, yellow and green, very pretty and tame, and some speak Mexican words" (Tezozomoc, p. 218).

Probably the wild pheasant, commonly known as the *chachalaca* (Appendix D, No. 4), is the most popular pet. Either the bird is captured young, or eggs are taken from the nest and are set under a barnyard hen to hatch. When the pheasant is large, it generally escapes unless caged. In the house of Agapito Bautista, a small tame *chachalaca* is housed in a gourd, which hangs in the kitchen. A large opening has been cut, as an entrance, and the walls of the gourd perforated for ventilation. Near the bottom, is affixed a small cross stick, where the bird can perch.

In Tajín, as in other parts of Mexico, the tale of the crossing of the *chachalaca* and the domestic hen crops up. The hen, it is said, is placed in the cage with the male *chachalaca*. Several informants had heard that in Papantla, the hybrid was bred for cock fights. Only 7 years ago such cocks are said to have participated in the fights staged in Papantla to celebrate Corpus Christi.

The hybrid cock is described as very small and long-tailed; fearless, it is willing to tackle any opponent, regardless of size. Owing to the slight weight of these fighters, it is said that they were unpopular and the crossing was not continued. This is, even to detail, the same story which circu-

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males and females is not very marked. Since this breed makes little noise, it sometimes is called the *pato mudo* (mute duck).

The distribution of the Muscovy duck is imperfectly known. It crops up occasionally among some of the circum-Caribbean peoples (Steward, p. 31) but seems seldom to be reported for Mexico. In modern times, it is found among the lowland Totonac in Tajín, Ojital, and Talaxca, and among the Maya (Steggerda, p. 146). A Huastecan lad, Tomás Martínez, from the Tancanhuitz area, does not recognize the duck from description. It is said to be common in "Indian communities" in modern Colima (Sauer, 1948, p. 65).

We have not attempted to search the literature for early Mexican references and few reports have come to our attention. In the late sixteenth century, a native domestic duck is mentioned in Michoacán (Relación de Ajuchitlán), and in the seventeenth, one of unspecified antecedents is reported in Oaxaca (Burgoa, p. 21). Landa (p. 247) relates that the ancient Maya raise (*crian*), for their feathers, large white ducks (*anadones*), which he believes to have been introduced from Peru. Domestication is by no means certain, since elsewhere the same authority (p. 251) states flatly that the only domesticate is the dog. He may refer merely to ducks kept in captivity.

Sahagún (3 : 191), who gives considerable attention to flora and fauna, lists only the wild duck. Diaz del Castillo (1 : 321) speaks of wild and tame ducks. The ancient Mexicans used duck feathers extensively, and there are two references to ponds stocked with them (Cortés, in Gayangos, p. 94; Cortés, in Lorenzana, p. 77). In one case, the term *"Lavancos"* is used, which in itself implies a wild form. Probably it may be concluded that the Mexica kept ducks in captivity but did not domesticate them.

[20] In Tuxcacuesco, Jalisco, pigeons also are associated with ill fortune (information from José María Corona), and the same holds for at least some pueblos of the Distrito Federal.

lates in many parts of western Mexico and which is as yet unproved by any critical eye witness.

DOGS AND CATS

In 1579, it is said that the Totonac of Misantla "do not have and never have had a larger animal than a dog, and this is very small" (Relación de Misantla).[21] The following year, "*perros de Castilla*" are reported among the Totonac of Coacoatzintla, near Jalapa (Paso y Troncoso 5:110).

In Tajín today, dogs are relatively numerous. Out of 38 families, 14 keep no dogs, but the remaining 24 have a total of 68, plus 15 pups. As a matter of fact, these figures assuredly are low, because most of the families of our census live within the *fundo legal*, that is, in the most settled zone of the community. If one lives close to his neighbors, the latter's dogs will set up an alarm when anyone approaches, but if one lives in an isolated house, he must depend upon his own watchdogs. Two families of our census, who live removed from the *fundo*, have 7 and 12 dogs respectively; another has 4.

Theoretically, the dogs set up a great hue and cry when anyone approaches the house, and the progress of a traveler at night can be followed for miles, by the barking on all sides. However, one day, I effectively ran the gamut of several hounds at the house of Pablo González, and to the undisguised surprise of the hosts, reached the kitchen door unannounced. Don Pablo thereupon explained that his dogs barked only at people who wore "Totonac" clothing, and those in city garb were unmolested. To reinforce his point, he added complacently that only the week before, the son of the house had been bitten, presumably because he was wearing *calzones*.

Dogs guard not only the house, but the poultry as well, and many an opossum meets its fate because the dogs give the alarm. Ana Méndez has her two little hounds so trained that they help "herd" the chickens. If one escapes, she calls the dogs; they chase the bird until it is so exhausted that Doña Anita is able to catch it without undue effort.

Dogs are used for hunting (pp. 74–75); probably few really are trained. Nevertheless, informants speak casually of hunting dogs, but apparently refer to professionally trained animals known through contacts with Papantla. A dog "of good race, already trained," is worth from $100 to $300 pesos; pups, from $25 to $50 pesos; needless to say, these are Papantla prices. In Tajín, Santiago Simbrón is said to have a fine dog; Bartolo Simbrón reputedly paid $100 pesos in Papantla for a bitch with a vague resemblance to a setter; Felipe Santes is said to have bought a hunter for $200 pesos; and Jacinto García also has "several."

Local dogs are quite differently priced. At most, one brings $5 pesos in cash, and Vicente de León sold one litter at about $2.50 each. Manuel de la Luz recently traded half a *fanega* of maize to Juan Castro for two attractive, better than average pups which he hopes to train as hunters. A Totonac who sells a dog generally lops off the tip of the tail—as usual, "so that the strain will not die out."

About all that can be said concerning the local canine race is that it is, on the whole, long-legged and short-haired. Males are more popular because "they do not attract other dogs." However, young Erasmo Xochigua prefers a female, remarking that when his bitch accompanies him to a strange house, the watchdogs are so interested in her that they pay scant attention to him.

Dogs are fed tortillas and kitchen scraps. They are catholic in their tastes and eat various fruits (papaya, oranges, *limas*, bananas, *zapote chico*); some will eat sugarcane and most like brown sugar. As a fine bit of rationalizing, dogs are not given broth with the tortillas, "because later, if there were no broth, they would not like the dry tortilla and might die of indigestion."

If a hunting dog is injured while attacking a peccary it is treated by magical therapy (p. 75). Otherwise, Totonac pay scant attention to a sick dog, even if it has a simple infection which could be cured with readily obtainable *creolina*. Through carelessness a wound may become infested with "worms," as a consequence of which the animal generally dies. Dogs sometimes eat, with fatal effects, the spoiled meat of some dead animal picked up in the forest. "Because they have fleas," dogs generally sleep outside, and occasionally die of the cold. The owner of two who demised last winter lamented; but she explained that she could not let the dogs approach the fire, for fear their eyes would become infected and they would develop mange.

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[21] This is the only mention we have found of the native dog among the Totonac. The sixteenth century Maya are said to have small domesticated dogs, "which do not know how to bark," and which are eaten upon festive occasions (Landa, p. 251).

A young pup may die if the fleas are removed from it or if it is given a name. When half-grown, a dog generally receives an unimaginative Spanish name. Two yellow canines are called *Canela* (cinnamon); other names include *Volcán* (volcano), *Buque* (ship), *Tigre* (tiger), *Zorrilla* (skunk), *Negro* (black one), *Bonita* (pretty one), *Jazmín* (jasmine), *Cazador* (hunter), *Payaso* (clown), *Solita* (little lone one), *Tlacuachita* (little opossum), *Maringuilla* (the female impersonator in the Negrito dance), and *Camerilla.*

Cats are less numerous than dogs. Of the 38 families mentioned above, 23 have no cats; the remaining 15 account for a total of 28. It is said that in adjacent Gildardo Muñoz there is a cat in every house, in the interests of rat control. Ana Méndez adds that a cat also is useful in killing lizards, which otherwise eat the thatched palm roof.

Modesto González summarizes his objections thus:

> Not all cats are good; sometimes they rob food from the kitchen; and they may soil the house. When a cat has young, she may bring a dead snake to them, or a rabbit, or a piece of dried beef. If she brings the snake, it is bad enough, but worse if it is dried beef, for she must have stolen it somewhere. For these reasons, not many people have cats.

Apart from these forthright reasons, it may be added that a good many people suspect that cats have traffic with the devil (*demonio*). There should be no black cat, at least, in a house with young children. It frightens them and, moreover, it might eat the spirit of the child, with fatal result.

With a few exceptions, the cats are indescribably wretched in appearance and evidently receive worse treatment than does the average dog. Nevertheless, Pablo González has a yellow cat which is almost fat and so much of a pet that she reclines much of the time against the warm clay *hornilla* of the kitchen "stove." The cat of Carmen Pérez Reyes also scrambles frequently on the earth-covered table which serves for cooking; and that of Rutilio Olmos is moderately sleek, sleeps on its master's blanket, and receives caresses from the adolescent boy of the family. These are, however, outstanding exceptions. By and large, cats are the most miserable looking bit of animal life in the community. They are pathetically underfed and ordinarily receive no attention from the family. Usually they do not have individual names, but in one household, a female is called *Jalisca.*

BEES

Little income is derived from bees. Only two families of our acquaintance make a practice of selling either wax or honey; occasionally a few candles may be sold, chiefly as an accommodation to a friend, who needs them for a birth, a funeral, a curing treatment, or some other special occasion.

Nevertheless, about half the families in Tajín keep bees on a small scale. Of the 39 households for which we have data, 18 have bees. Of them, 13 have the native bee; 3, the Old World, introduced form; and 2, both types. The native bee is housed in a length of bamboo, in a hollow tree trunk, or in an earthenware jar (pl. 4, *b–d*, *f*); each "hive" is known as a *colmena* (taškat‘). In contrast, the Old World bee invariably is kept in a wooden box (pl. 4, *e*), and its hive is referred to as an *enjambre* (swarm), never as a *colmena.*

A candle of the wax of the native bee plays a prominent role in certain ceremonies, especially those associated with birth and death; the wax of the introduced bee is not an acceptable substitute. However, in certain parts of the same ceremonies, candles of the wax of the Old World bee are used; moreover, they alone are placed on the altar in honor of the Christian saints; and they also are used in Catholic rites generally, and for "purification" ceremonies, in the course of which the body is stroked with candles.

THE NATIVE BEE

Two kinds of native bee are exploited; one, at least, is genuinely domesticated, since new colonies are propagated. This is the *colmena real*, known in Totonac as taškat‘, tasqat, or kiwitáškat. The same term (taškat‘) is applied to honey of any kind, to sugarcane juice, and to the hive of the native bee. The latter is said to have a small sting and to live either inside the stem of the bamboo or in hollow trees.

The other type of native bee is called koamekas, or kualméka (dubiously considered Totonac); it has no sting whatsoever and has the same living habits as the other form. It is scarce and rarely is to be seen either in the forest or in the yards of the houses.[22]

Theoretically, "the old man of the *monte*"—who controls the destiny of game animals and who often is identified with stone figures found archeologically—is the "chief" of the wild bees. A similar belief probably held in the Huasteca, where one of the stern questions put to Indian charges was, "When you go to hunt, or to look for beehives, do you speak first or do you give food to the idols which are in the forests?" (Tapia Zenteno, p. 107). Today, Christian saints have invaded the domain of the "old man of the *monte*." One informant believes that St. Lawrence has charge of wild bees; another, St. Anthony.

A Totonac who finds a hive of usable wild bees may cut the trunk of the tree, extract the honey, and close the gash with mud or ash. Or he may cut the trunk or the bamboo with his machete, and, without further ado, carry home the length which contains the hive. Water is not sprinkled on the cuts (cf. Foster, 1942 a, p. 538), and no smudge or other protection is needed, for the native bee does not sting.

The trunk containing the hive is hung against the wall of the house, "where it will not receive much sun." We have seen such hives on north, east, and south walls. Generally, the trunk is placed horizontally, supported at each end by a length of liana. If too high, close to the thatched roof, the *tepehua* ants may destroy the colony, although it is said that each hive has a bee which stands at the entrance, as a sentinel, to warn of intrusion. Some say that if the trunk is hung too low, the chickens will devour the bees; others affirm that they eat only the Old World form. At one house, the trunks merely are leaned vertically against the kitchen wall; at another, the hives reputedly are hung inside the dwelling.

The removal of the honey and wax is known as "castration." Some "castrate" every year, but most, every other year, generally in late October or in November. However, if a neighbor needs honey urgently as a medicine, a beekeeper usually is willing to open a *colmena*, except in very cold weather. In that case, he refuses, for the bees may die.

"Castration" is performed by either a man or a woman. There are no special requirements, such as continence or fasting (cf. Foster, 1942 a, p. 538). One informant recommends smoking a cigar or burning incense as a soothing measure, but others give this same advice in connection with the Old World bee, not the native form. The trunk or the bamboo is split longitudinally through the center and the honey and wax are removed. Sometimes the bees are returned to the same trunk, which is closed, tied with liana, and the split sealed with a paste made of ash and water. At this time, great care must be taken that no insect pest penetrate the *colmena*. An infinitesimal "fly" (called *pedorrilla;* iškaλ, škał) may enter and lay eggs; these become "worms" which eat the young bees.

Informants claim that the native bee does not swarm. Consequently, when the bamboo or trunk is opened, generally the hive is divided and a new colony established in an earthenware jar.[23] The progeny is contained "in a round thing, like a tortilla, not very thick"; these are formed one on top of the other in the hive and are surrounded and covered by "the nest." The latter is broken, and the upper half of the superimposed disks is removed to serve as the nucleus of the new colony.

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[22] A third type (ču.nín, čuamín) is larger than the preceding ones and has a long sting. Its hive is not brought in from the *monte,* although the wax and honey are removed. The honey may amount to "2 gallons," and the wax may fill a wooden tray. The honey has a distinctive taste which appeals to few people.

In addition, Modesto González lists a number of insects which he classes with bees, evidently including wasps and possibly other related forms. These produce little or no honey and wax, hence are not exploited. The stitit' is stingless and lives in bamboo thickets; the ča·yán also has no sting and lives "in any tree"; the ča·yán has a small sting and similarly is not fussy about its dwelling. The akstú.nat, known in Spanish as *cojón de toro* (bull testicle), stings sharply and builds a nest which hangs, baglike, from a tree. The "bee" known as ška-ná? is "ferocious" and attacks people; for this reason, it is called facetiously, *Otomite* (Otomí Indian). It is found in holes in the ground or among rocks.

A minute form, called skulún, is said to be the size of a gnat. We have no further data concerning it.

[23] This is of particular interest because it indicates true domestication. Foster's brief survey of apiculture (1942 a, p. 538) indicates that "the final step, the propagation of new colonies, is but rarely taken."

His review (p. 542) of the types of containers indicates that clay hives were common in Colombia in the late sixteenth century but that "no examples from modern times, or archaeological specimens, are known." Accordingly, we may note the few cases, other than Tajín, which have come to our attention.

Pottery hives are reported (by Bodil Christiansen) for Mexican Cuetzalán, in the Sierra de Puebla.

They likewise have been observed (by G. Stresser-Péan) "in one part of the Huasteca." As far as we could tell, the native bee seems to be little exploited in the Tancanhuitz zone of the Huasteca. Honey and wax sometimes are gathered in the *monte,* and occasionally the trunk is cut and the hive transported to the house. However, two mestizo informants in Tancanhuitz independently described the use of clay vessels as hives, and a similar report comes from farther south, in Matlapa, near Tamazunchale. Once part of the Huasteca, the Matlapa area now is predominantly Mexicano. Townspeople report clay hives, although we saw none.

Finally, in Ixcateopan, Guerrero, Ing. Roberto Weitlaner was informed that in a nearby village to the west, bees are kept in pottery jars.

Previously, a sizable clay jar is prepared. A small hole is punched in the side, as an opening; but for the present, this is stuffed shut, usually with a bit of paper and ash paste. In the bottom of the jar, two slender sticks are placed parallel to one another, and on top of them, at right angles, two more are arranged. On this four-stick frame, the disks containing the new colony are placed. "not everyone uses the frame"; some put the comb directly on the floor of the vessel.

The mouth of the jar is tightly covered—with a gourd, whose convex surface fits into the aperture; with a large sherd; or with boards from a box. Ash paste is smeared over the junctions and the bees are left 4 days within the sealed jar. During that time, they produce a very hard, dark gum, apparently peculiar to the native bee, which is known as *atakawite* (perhaps a Mexican word, hispanicized; the Totonac term is kaskála),[24] and with this they seal the cover in place and modify the opening in the side wall. At the end of 4 days, the plug is removed from the aperture and the bees come and go at will.

Pottery hives are hung from the wall of the house (pl. 4, *b*, *c*); or they sit on a horizontal pole (pl. 4, *f*), or on a series of shelves (pl. 4, *d*) which raises them off the ground.

The honey of the native bee is considered primarily medicinal, although some eat it "for pure pleasure," with a special kind of bread (*pan de agua*, made of flour and salt, but without eggs). Anyone who consumes honey in quantity is likely to run a temperature, since it is a "hot" food. Unboiled honey has greater potency as a remedy, but most is boiled, then stored in a clay jar. Mixed with alcohol (*refino*), it is taken as a tonic by debilitated persons of either sex and is considered especially helpful during pregnancy. A tea made of honey and *yerba dulce* (Appendix C, No. 150) is drunk to relieve menstrual pain. Both sexes take honey for abdominal pain generally, and it is said to be effective in speeding slow parturition. After birth, the mother may have no milk for several days; if it is unduly delayed, the infant is allowed to suck a rag saturated with honey. One of our friends, unable to nurse her child during the first month following birth, reared him largely by means of the honey-soaked rag. In none of these cases is the honey of the Old World bee an acceptable substitute.

The wax, known as *cera puera* (dirty wax; lí̵ltam), is squeezed in the hands over a gourd, to release it from the honey. Sometimes it is exposed to the sun for a couple of days; sometimes it is boiled at once. Nobody, man or woman should watch the operator as the wax is being boiled. In the evening, it is placed with water in a pottery jar and the latter is left on the fire throughout the night. In the morning, the pot is removed from the hearth and cold water added. By the following day, the wax has solidified on the surface, in the form of a cake whose size and shape correspond to that of the mouth of the jar. The wax, which is very dark, is washed well and is rubbed between the hands until it turns yellow. It is not boiled further but generally is formed into round cakes.

We have no precise figures concerning production. As a general thing, a family has from 1 to 5 *colmenas* of native bees; however, one household has 10, one 16, and another, 32. A woman whom we asked claimed not to know how many hives she has; the bees leave, she says, if one keeps close count. Estimates concerning wax vary widely, from an eighth to a full kilogram per *colmena*. Obviously, the quantity varies according to the frequency with which the wax is collected. Some count the yield in liters, saying that three or four hives may produce an *almud* (12 liters). Although this is a measure by volume, in Papantla, wax is purchased by weight—formerly by the pound, now, by the kilogram. The current price is $4.50 pesos; wax of the Old World bee sells for slightly more.

In Tajín, most families retain the wax for personal use. It is consumed almost exclusively in the form of candles (lí̵ltam makantíla; from Spanish *candil*, *candela*?)—thin, ill-shapen, and very brunette candles, which "smell very pretty as they burn." Each household generally makes its own candles; occasionally when an emergency arises, they are purchased from neighbors. Sale is frowned upon, because ordinarily the candles have been blessed by the priest the Day of Candlemas (February 2).

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[24] *Atakawite* is not medicinal. With it are mended pots or gourds, or any other container which is used for liquids but which is not put on the fire. The gum is melted and the break sealed. Formerly, although not within the memory of our informants, *atakawite* was used to illuminate the house at night. A small amount was lighted and placed on a sherd or in a clay dish; no wick was necessary.

To make the candle, some moisten a table top with water and spread the wax on it in a sheet—about 10 cm. wide and the desired length of the candle. A wick of commercial twine is dipped a couple of times into the melted wax and then is placed on the center of the wax sheet. The edges of the latter are folded over to enclose the wick, and the whole is then rolled until a candle of sorts is produced. Some merely roll the wax between the palms, working the wick into it. Occasionally, the wax is melted and the wick dipped into it several times in succession; but never are the wicks suspended from a wooden hoop and the wax dribbled on them in sequence, as is the practice when making candles of the wax of the European bee.

Díaz del Castillo (1:192) notes that the Spaniards showed the Totonac of "Cempoala" how to make candles from the wax of the native bee.

THE OLD WORLD BEE

Only one type of imported domestic bee is recognized in Tajín. It is far less popular than is the native form; fewer families have hives, and the average per family is lower. We know only one household which has more than three hives, this exception being that of José Bautista, who makes a practice of selling wax and honey. He has 38 *enjambres* of the intrusive bee, 32 *colmenas* of the native form.

The Old World bees are "delicate; not everyone can raise them." When a married couple bickers constantly, either the bees leave or "worms" destroy the hives. The same calamity results from marital infidelity and from drunkenness.[25] Informants cite concrete examples with pleasure. A couple we know wrangles incessantly; both work diligently at beekeeping, but with little success. Neighbors remark that the case is hopeless. Another example is that of an old gentleman, now dead, but a contemporary of the informant's grandparents:

> He was a man who lived "very correctly." Once he went to Papantla to sell the wax from his *enjambres*. There he met a friend who persuaded him to sell it in Gutiérrez Zamora instead. The two went there; they started to drink, and the trip ended in a big drunk. When the man returned to Tajín, he had no bees. Formerly the patio of his house was full—but now all had gone.

The Old World bee is particularly sensitive to contact with death. If one goes to a wake, he should bathe before approaching the hives, or the bees may leave. To soothe them, a black cloth, as a sign of mourning, is placed on the box, or two or three crosses are marked on it with soot. It also is prudent to bring a candle from the wake and to break it in small lengths, putting several, presumably lighted, on top of the box in which the bees are kept.

The Old World bee requires more care than does the native form. Boxes are arranged in the shade, beneath shrubs in the patio of the house or under a simple palm-thatched roof. They rest on two sticks, which raise them a few inches from the ground. Sometimes, during rains, the boxes are moved inside the dwelling for protection. To avoid a certain "worm" (kaltísaluˀa), the box must be cleaned from time to time and smoked with incense. *Tepehua* ants (ta¢anáˀa) also are a pest, for they enter the hives and eat the young. A certain bird (akpíliˀlit) roosts on a nearby tree and eats the bees as they emerge from the hives, and the domestic fowl also makes inroads.

Some obtain their original stock from swarms which have escaped to the *monte*. According to one observer, the domestic bee swarms three times a year. The first and second swarms are the largest; the third is the smallest, but it also is the best, because the bees of this lot "are very hardworking."

To attract a swarm and to keep it from escaping, a gasoline tin or some other metallic object is beaten. Meanwhile, preparations are made to capture the bees in a box. The latter is a common alcohol, gasoline, or kerosene box (capacity, two 5-gallon tins) (pl. 4, *e*) purchased in Papantla. It is washed and a bit of copal incense burned inside, "to give it a nice smell." Some rub the box with brown sugar to make it more attractive.

If the swarm lights on an overhanging branch, the latter either is shaken gently or is lopped off with the machete, so that the bees will fall into the box. Otherwise, a "broom" is made of *capulín* (Appendix C, No. 85) "because it has a nice odor"; it is dipped in water, and with it the bees are brushed from their resting place into the container. The box is covered with a cloth from 4 to 6 days, until the comb is begun and the bees are less likely to leave.

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[25] There are no such associations with the native bee—perhaps one reason why it is the more popular. The correlation between beekeeping and righteous living may be Old World. At least, in the mestizo town of Tuxcacuesco, in Jalisco, there is a common belief that earnings from bees should be spent on clothing or food, not on "vices," such as tobacco and wine. Otherwise, the bees will abandon the hive (information from José María Corona).

Foster (1942 a, p. 539), however, reports that the Popoluca believe that the native bee cannot be kept successfully by families who squabble continuously.

The Old World bee has a sharp sting and some protection is necessary. When bees swarm, their pursuer carries a smudge of corncobs in a homemade pottery incense burner (fig. 45). Some who handle bees burn a large cigar; others prefer incense.[26]

"Castration" takes place every two or three months, but not when the young are plentiful nor when the rains are heavy. The bees are quieted by smoke; the box is opened, the combs removed and cut with a sharp knife. A bit of honey is left as nourishment. The honey is extracted simply by squeezing in the hand. If it contains much foreign material, it is strained through a thin cloth. José Bautista sells a bottle containing three-fourths liters of honey at 25 centavos.

The bee, the comb, and the wax seem all to be known by the Spanish term, *cera* (wax). Some wax is sold to the stores in Papantla, at $5.00 pesos the kilogram, a price slightly higher than that of the native bee. Most people in Tajín prefer commercial candles, but home-made ones are prepared from unsold wax; these vary, according to size, from 10 centavos to a peso. Wicks of purchased twine are hung from a loop of liana, which is suspended from the rafters of the house. With a spoon, the molten wax is dribbled in turn over each wick; the latter are not dipped.

A candle of the wax of the introduced bees is known simply as kantíla (Spanish *candil*, *candela?*). It is used for illumination, for burning in honor of Christian saints, and for "curing" or purifying a person by stroking. A dying individual is given a lighted candle of *cera puerca*, duly blessed, to hold. But for certain subsequent ceremonies connected with death (the funeral, and rites which take place the ninth and eightieth days following death), candles of the wax of the Old World bee are used. There seems to be some correlation between introduced ceremonies and candles made of the wax of the introduced bee; and, in part at least, candles of *cera puerca* are associated with ceremonies which appear to be basically indigenous.

AGRICULTURE[27]

Since early times, the Totonac have been an essentially agricultural people. In "Cempoala," the Spaniards found ample provisions, as well as generous hospitality, and local economy evidently was based on intensive agriculture, accompanied by irrigation.[28] For two Totonac pueblos of the same general area—Colipa and Tepetlán—there are sixteenth-century reports of irrigation, as well as for a nearby Mexican town, Atexca (Paso y Troncoso 5: 115, 117, 120). The Tajín Totonac do not practice irrigation, which seems out of the question, given the rugged terrain and the frequent shortage of water.

In Tajín today, virtually every family plants. Men are the farmers, although women sometimes assist in the fields, and a few carry about as heavy agricultural responsibilities as do the men. The mainstays of local agriculture are maize, cane, and vanilla, of which the first is an aboriginal crop, the second an introduced one, and the third, aboriginal, but apparently not ancient in the Papantla zone. Maize is grown chiefly for home consumption. Any surplus is sold, but most families harvest only sufficient for their needs. Some produce less than they consume and are obliged to buy toward the end of the season. Cane is grown both for local use and for sale. Probably Tajín produces most of the brown sugar it consumes, and some families derive a considerable cash income from the sale of sugar in Papantla. Unlike the preceding, vanilla is exclusively a cash crop.

The Tajín trio of maize, cane, and vanilla is by no means general throughout the Papantla zone. Gratuitously, the Federal census taker has indicated, in a number of Totonac settlements of that municipality, the major crops grown by each family. The data are summarized below, with entries in terms of the number of households.

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[26] Said to be the type brought for sale by traders from the highlands. Assuredly, this is copal incense; in fact, the vendors call it "kópali." One informant is certain that it is different from the incense bought in Papantla, but a storekeeper there assures us that *incienso* and *copal* are one and the same.

[27] A number in parentheses following the name of a plant refers to the herbarium catalog, in Appendix C.

[28] We have found no early report of irrigation at "Cempoala." However, Ing. José García Payón (letter of December 19, 1949) has discovered archeological evidence of irrigation canals; these, he says, have been widened and are in use today. One of his published reports (García Payón, 1949 b, pp. 453–454) indicates, moreover, that potable water was brought to the settlement through a system of canals.

	Tajín	Plan de Hidalgo	Plan de Palmar	Santa Agueda	Volador
Maize only	10	5	2	0	3
Maize, cane	1	0	0	0	0
Maize, vanilla	30	44	40	0	24
Maize, cane, vanilla	56	22	0	0	0
Maize, beans	0	3	5	36	173
Maize, beans, vanilla	0	0	11	0	0
Vanilla only	0	0	0	0	1
Not specified	37	15	0	0	0
Total	134	89	58	36	201

The only basic crop common to these several Totonac settlements is maize. Tajín and Plan de Hidalgo are situated close to one another and, expectably, their crops are roughly parallel; both emphasize maize, cane, and vanilla. In Plan de Palmar, maize and vanilla are prominent; beans also are reported but cane is not mentioned. Maize and beans are the standard crops in Santa Agueda; they likewise predominate in Volador, which has, in addition, some vanilla but no cane.

The selection of crops is, in part, a matter of personal choice. Pedro Pérez, for example, prefers cane to vanilla: "at the end of a year, the cane can be crushed, but it is 3 years before vanilla produces. Moreover, one must guard vanilla carefully or it is stolen." In part, however, natural requirements of the plants limit the choice. A level field, with poor drainage (known as an *aguachal*), will serve for cane or for vanilla but not for maize; the latter requires good drainage and does best on slopes. Vanilla can be grown either on lands of good or poor drainage, but both the yield and the life of the plant vary according to soil conditions.

MAIZE-VANILLA ROTATION

Somewhat optimistically, one informant thinks that a maize field may be planted continuously for 25 years, provided it is well tended and weeds do not have a chance to establish themselves. Most, however, put the estimate much lower. "In the old days," according to Modesto González, a field lasted from 15 to 20 years; at first, two harvests annually were possible, later, only one. Tirso González calculates four good harvests (that is, 2 years) from a new field, after which the production diminishes noticeably. However, he says that ordinarily a field is worth cultivating 8 to 10 years.

As a matter of fact, the maximum duration of a maize field no longer is of much interest to the Tajín farmer. Generally, at the end of 2 to 4 years, a field is allowed to grow to *monte* and, at the same time, the crop is shifted from maize to vanilla. Maize requires a clean field; vanilla requires *monte bajo*. Since from the start it is a losing job to protect the maize from the incursions of the *monte*, the Totonac solution is very logical. *Monte* is allowed to take possession of the field and vanilla is planted in it. The *vainillar*, or vanilla field, endures about 10 years, although toward the end of this span the yield is low. As a rule, after 12 years, at the most, the vanilla is abandoned and the field is given up completely to *monte bajo*. This is allowed to grow unmolested for 10 to 12 years, following which it is cleared and maize planted anew.

In the opinion of the Totonac, this lapse of a decade is necessary—not so much for the rehabilitation of the soil as for the growth of the *monte*. If a field is cleared of young, half-grown bush, the latter does not burn well. The seeds of many annual weeds survive, so that when the plot is planted, the corn is choked by a luxuriant growth of *mozote*, *coyolillo del ratón*, *zacate de venado* (Nos. 325, 311, 288, respectively), and other aggressive plants. Weeds are no imaginary menace, and with monotonous frequency one hears that so and so has abandoned his field: "*le ganó la yerba*," or "*se acahualó la milpa*." Of our acquaintances, at least eight lost their corn crop in 1948 because they were unable to curb the growth of weeds.

Although virtually all Totonac farmers seem to feel that their chief problem is the never-ending struggle against the weeds, most also recognize the fact that the soil becomes exhausted. Despite the lush natural vegetation, the top soil is relatively thin—generally, not over 50 cm.—and it is only expectable that it cannot stand continuous cropping over a period of years. We have no concrete data concerning soil exhaustion, but the three adjacent cornfields of Víctor Morales are suggestive. One, cleared a year ago, has tall, strong plants; another, cleared 2 years before, has smaller plants; and in the third, now in its third year, the growth appears stunted. All are said to have been planted simultaneously. Other factors may be involved, but the implication of soil depletion is strong.

On the contrary, we have figures from one field which has been planted continuously for 7 years (ftn. 44, p. 119), but the yield of which nevertheless is well above the general average. This suggests that the local situation may be parallel to that of Yucatán, where a series of controlled experiments indicates that soil exhaustion is slight and that decreased yield is attributable chiefly to "increasing weed competition" (Morley, p. 148).

Fertilizers are used only incidentally in Tajín and are limited to the ash from the initial clearing and, in subsequent years, to the litter of stalks from the preceding crop and the weeds removed in the course of cultivation. One of our friends, thoroughly bilingual, does not even know the Spanish term for fertilizer.

While most Totonac take soil exhaustion as a matter of course, an exception is Santiago Simbrón, owner of the field mentioned above as still producing a better than average harvest after 7 years of continuous planting. He expresses his opinion thus:

> The soil does not wear out. The first harvest is as good as the second, or the seventh; and the first year and the last are the same. At least, so it seems to me. What changes are the rains, the sun, and the wind—but not the earth, if the planting is made in the same field.

The only deliberate rotation of crops is found in the maize-vanilla cycle. Some plant sugarcane when the maize yield declines, but apparently this is not a general practice, probably because of differences in moisture and drainage requirements. However, inasmuch as most crops, except vanilla and cane, are planted in the maize field, automatically they follow the cycle of the latter.

In any case, there is a long term maize-vanilla-*monte* rotation, which takes 20 to 25 years to complete and during approximately half of which the land lies fallow. If this cycle is applied strictly, on the assumption that all land is equally suited to maize and vanilla, each family would require about 12 hectares of land.[29]

How does this theoretical requirement accord with the amount of land available? If we disregard a scattering of fields which spill over into Tlahuanapa, Gildardo Muñoz, and Coatzintla (map 8), there are 114 parcels of land, of approximately 31 hectares each, which either belong to Tajín or which are exploited by the Tajín Totonac. And these 114 parcels are utilized by a total of 205 families.[30] There is, accordingly, an average of about 17 hectares per household. If we deduct the vacant land parcels and those which are not planted, a total of 99 parcels actually is exploited, and the average per family drops to about 15 hectares—somewhat more than present minimum requirements.

All this reckoning is, of course, largely theoretical, but it agrees pretty well with our general impression that there is a comfortable surplus of land. Naturally, in practice, the distribution of lands is quite uneven, and while some families are abundantly supplied, others are beginning to feel the pinch. We may guess that within another generation or so, the present allotment will be barely sufficient for the needs of the community, provided the current pattern of land utilization is continued.

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[29] This figure has been calculated as follows: We assume that each family plants 1.5 hectares of maize each year. We assume, further, that the same plot is planted for 3 successive years, at the end of which time it is given over to vanilla and a new field cleared for corn. Accordingly, beginning with the fourth year (see below), a family would have 1.5 hectares of maize and 1.5 of vanilla. In the seventh year, it would have a new maize field of 1.5 hectares, and vanilla holdings of 3 hectares. By the tenth year, vanilla would have increased to 4.5 hectares, to which we shall arbitrarily limit it. With the start of the thirteenth year, the original field—which has been planted 3 years to maize, followed by 9 of vanilla—is allowed to revert to *monte*. In the sixteenth year, fallow land amounts to 3 hectares; in the nineteenth, to 4.5; in the twenty-second year, to 6 hectares.

Years	Maize	Vanilla	Fallow
1–3	1.5		
4–6	1.5	1.5	
7–9	1.5	3.0	
10–12	1.5	4.5	
13–15	1.5	4.5	1.5
16–18	1.5	4.5	3.0
19–21	1.5	4.5	4.5
22–24	1.5	4.5	6.0

By the end of the twenty-fourth year, 12 hectares of land are or have been in use. Also, by this time, the original 1.5 hectares have lain fallow for 12 years, and the cycle starts anew.

[30] There is a total of 186 families in Tajín; moreover, two families from Papantla and one from Tlahuanapa exploit Tajín lands, as do 16 who give public labor in Ojital. The total, therefore, is 205.

This figure is only approximate. For example, 10 of the Tajín and one of the Ojital families do not plant; another Ojital family plants in Coatzintla. We assume that these discrepancies are offset by (a) the several Tajín families who plant on lands outside the community, and (b) the Ojital parcels which are exploited jointly by Tajín and Ojital citizens, although, with few exceptions, neither the fields nor the houses of the latter appears on map 8.

This pattern probably is of fairly recent development. There is no indication that vanilla is an ancient cultivate in the Papantla zone, and vanilla production has increased considerably within the memory of informants. Recent or not, the rotation scheme is well entrenched, probably because it accords so neatly with the inability to cope with the *monte.* Moreover, it has other points in its favor. Although the present pattern of land utilization cannot be considered particularly economical, at least it offers a certain degree of stability and permanence. If the *monte* and annual weeds were curbed sufficiently to permit continuous planting, assuredly fertility would be reduced dangerously. Moreover, about the only way of curbing the *monte* would be to eradicate it by root—in which case, the incursion of grassland would be a real threat. Once grass is established, all hope of cultivation is lost for a good many years. For the time being, at least, it seems wise to let well enough alone— until we can be absolutely sure that a substitute pattern of land utilization would be a genuine improvement over the present one.

MAIZE

Maize cultivation is basic to Totonac economy, and maize prepared in various ways is the staple food. Except for 10 households (storekeepers; lone women; widows with small children), every family in Tajín plants maize.

The size of the field seems to depend more on convention than upon the needs of the family. Irrespective of the number of individuals in a household, the cornfield pretty consistently is calculated at 1 hectare or 1 *destajo*, which is slightly less than 1.5 hectares; in rare cases, 2 or 3 hectares are devoted to maize, and many families have 2 or 3, or more, hectares of vanilla.

Except for cane and vanilla, which are the two cash crops—cane partially, vanilla entirely—little effort is directed toward producing surplus produce for sale. Transport to Papantla, which is virtually the only market, is not especially easy, and some Totonac think that a more passable road might be a stimulus to greater production. But a good many have a fatalistic attitude, for example:

> In Tajín, there never is any excess of any crop. One may plant more than he needs, but it simply does not yield. This year, Francisco Xochigua planted more beans than he could use, expecting to sell them. But he lost the entire harvest. In Plan de Hidalgo and Plan de Palmar, the economic situation is better. Each year those people are able to sell more vanilla than we, and they have such large harvests of maize that they are able to sell it as well.

KINDS OF MAIZE

The Totonac recognize several distinct kinds of maize, classified broadly by color, but further subdivided on the basis of a number of other distinguishing features. According to informants, the four basic types are: *maíz blanco* (white corn), which is the tortilla corn par excellence; *maíz amarillo* (yellow corn), grown principally for animal feed; *maíz morado* (purple corn), used mostly for maize gruel; and *maíz colorado* (red corn), raised chiefly because of its alleged magical properties. In addition, there are several kinds of mixed colors, which the Totonac consider the result of hybridization.

Sweet corns and popcorns are unknown. Atavistically, all the local corns occasionally produce a basal kernel enclosed by a glume and believed to be possessed of magical properties. Such kernels of pod corn are rare, perhaps one or two grains in a *fanega* of 144 liters.[31]

Maíz blanco.—When mentioned collectively, white corn is called kúši, the generic term for maize. Four different kinds are recognized:

a. lanqakúši (*maíz grande:* large corn),[32] known also as sakakúši (*maíz blanco;* white corn). Of all the corns, this is the most popular because of its high yield and its general utility. Its weight per volume is considered by some to be greater than that of other corns. This claim, however is disputed. One maintains that the smaller white corn, described below, weighs more. Others say flatly that the difference in weight is not dependent upon the maize, but upon the soil in which it is planted. According to them, corn—regardless of variety—which is grown on clay slopes weighs more than that which is raised on level land. Juan Castro and Nemesio Martínez, local storekeepers who buy and sell corn, calculate that maize grown on an open plain may weigh when thoroughly dry, about 98 kg. the *fanega* of 144 liters; the same seed, planted on a clay slope, will weigh as much as 115 kg. Although in Tajín, maize is sold by volume, in Papantla it is sold by weight; accordingly most Totonac farmers select hillsides for their maize fields.[33]

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[31] A specimen of such a kernel was submitted to Dr. Paul C. Mangelsdorf, who writes (letter of August 9, 1948) : "This grain of corn is of considerable interest . . . for it undoubtedly represents true pod corn."

[32] The large white corn is described by Dr. Edgar Anderson as a "fairly tropical cylindrical white maize. This is the commonest commercial type in eastern Mexico and is widely grown elsewhere . . . It is in the same general class with such varieties as 'tampequeño' and is in my opinion a high derived sort."

The ears of the large white corn are said to average about 25 cm. in length; "the largest ears are produced in the center of the field," not on the periphery. The grain is considered slightly "sweet," but the sugar content evidently is not sufficient to produce the marked wrinkling which is characteristic of sweet corn.

Informants report that typically the ear of the large white corn is not completely covered by the husk, and a slight gap at the tip permits both moisture and weevils to penetrate.

A further peculiarity of this maize is that, invariably, although only white seed be planted, the harvest is mixed with red. As will be seen below, informants recognize three different kinds of red maize which appear unsolicited in their fields of large white corn.

The large white is said to have replaced, in considerable measure, the smaller white described next. We were unable to obtain a time estimate or a statement concerning the provenience of the larger, now more popular white corn. Replacement is far from complete, and a number of Tajín farmers still cling to the supposedly older white corn, with smaller ear.

b. laksukúši (*maíz chico:* small corn), aksukúši (*maíz chiquito;* very small corn). This white maize[34] is best described by comparison with the preceding. The ear is smaller (ca. 15 cm.) and is well sealed by the husk, as a consequence of which it is better protected against both moisture and pests. While the large white maize is said to be slightly sweet, the small type is tasteless (*simple*). It requires less moisture and yields better than the other in time of drought; also, it matures 10 to 15 days earlier than the large white. As noted above, it is said to be more ancient in Tajín than is the larger variety.

In sharp contrast to the latter, the small white corn does not produce red maize. "If one plants all white seed, the harvest is unmixed, unless the field happens to be near one in which red is planted" (cf. ftn. 38, p. 104). Since the red (iłkón) is believed to protect a field from damage by "wind, sun, and eclipse," a good many people deliberately mix a bit of red seed when they plant the small white.

c. pá¢it. This maize is distinguished from the preceding white forms by its purplish leaf and cob. Its kernels are white and the ear is said to average in size about the same as the large white. It ripens the same time as the latter.

Like the other white corns, pá¢it is a general utility maize. It is said to be extremely common in adjacent San Antonio, and its popularity in Tajín appears to be on the increase during the past 2 years. This may be because pá¢it is said to have greater resistance to weevils than have other white corns. One informant favors pá¢it because its husks are unusually large and therefore are useful in wrapping cakes of brown sugar.

d. aksukúši páspula (*desgrana caminando;* evidently descriptive of a corn whose grains are removed with great facility). One informant describes this as a "thin white corn, of small ear, with the kernels loose on the cob." The cob also is "thin," and the grains "pointed and narrow." We have not been able to obtain a specimen of this white maize, which appears to be unknown to most informants. Some years ago, Domingo Santiago grew this corn, planting seed which he believes came indirectly from Agua Dulce. However, 4 or 5 years ago, he ceased planting, and as far as we could determine, this maize no longer is grown in Tajín.

Maíz amarillo (šašmokuʔkukúši, smukukuši; smukuku, yellow).—Yellow corn[35] is planted by relatively few families in Tajín. It is grown chiefly to fatten hogs but also may be fed other livestock. Because "the people want to eat white tortillas," yellow maize is disdained for human consumption; one informant considers it intrusive from the highlands.

Maíz morado (laqá¢it).—This is a purplish-red maize,[36] sometimes called black (*negro*), which is used almost exclusively for the fermented gruel known as *atole agrio* (sour gruel). If this particular maize is not available, atole, either fermented or otherwise, is made of white corn. Purple maize is not used for tortillas; some women say that "they would be very dark"; others state with simple finality that they have never seen a tortilla made of this corn. Although fowl refuse to eat *maíz morado* (*sic*), it is fed to hogs and to horses.

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[33] We asked why maize grown on slopes weighs more and were told that it is "because the soil is hard." Some say that the best soil for maize is yellow in color. We collected samples of soil from several fields but have not found anyone to make analyses.

One informant maintains that for summer planting a slope is preferable, because of the rains; for winter planting, he prefers low, level land.

[34] Dr. Anderson writes that "from the look of the ear . . . I would suppose that in part it traces back to the early-maturing, small-eared sorts of the Isthmus, which Hernández originally collected under the name of 'Zapaluta chica.' " He adds that if the "little white has very much 'Zapaluta chica' in it, this should show up to some extent when I grow it next summer."

[35] Dr. Anderson's comments follow: "Cylindrical ear; no husk compression; smallish cobs; white cob; colorless pericarp; colorless aleurone. Deep yellow endosperm; light capping of soft starch to a small, regular dent. No pointing. Undoubtedly traces back to deep yellow, few-rowed varieties. Its vitamin content is really higher, and probably it would be better for the Totonacs if they fed it to themselves as well as to their animals."

[36] With respect to the 1947 specimens of *maíz morado,* Dr. Anderson notes that the ear is "cylindrical to slightly tapered; mostly with red cob; all with red pericarp (P); aleurone colored and colorless; white endosperm; more or less colored in the hard portions (a curious character); denting slight or none; no pointing; kernels small and tending to be isodiametrical."

A larger sample was collected in 1948, and Dr. Anderson reports that it "is all clearly with a white cob, colorless pericarp and colored aleurone. It is of the same general type which is widely used in the back country for elotes, for sweet *atole,* and very probably for alcoholic beverages. As is frequently the case, it averages lower row numbers, narrower kernels, and flintier kernels than the other varieties with which it is being grown. Of the 17 ears in the collection, 8 had 12 rows and one only 10 rows, while in the sample of red corn less than a quarter of the specimens had 12 rows."

It is said that "some plant only white corn, but most plant a little *maíz morado* for gruel." The seed never is mixed with the white, and purple corn invariably is sown in separate rows, generally along the edge of the field. Agapito Pérez plants 3 liters of this maize, which he considers sufficient for the atole requirements of his family of three adults and a child.

Several subclasses of *maíz morado* are recognized by Modesto González. In the paragraphs below, his comparisons presumably refer to the large white corn described above.

a. laqá¢it (*maíz ciego*, blind corn). In the field, "this corn looks like the white, but the stalk and the ear are somewhat thinner." The husk may be either white or reddish. The harvest is mixed, with some white and some purplish-red ears. The cobs also are of either color. However, atole made from this corn is "purple" (really a sort of mulberry color).

b. šʌ¢i¢áqat-laqá¢it (black laqá¢it). The cane, leaf, blossom, and husk are identical in color with those of white corn, and the ear is the same size. The grain is larger, but "the color of the atole does not turn out well; it is not purple." This maize is used for fermented gruel, but "the people do not like it very much."

c. snu·nkut-laqá¢it (orange laqá¢it). In the field, this corn is recognizable because "the ear is short and small, and the stalk and leaf are thin." Nevertheless, in color, it is indistinguishable from the white corn. Gruel made from it is "purple."

d. pa·¢ít-laqá¢it (purple laqá¢it). This name is given "because the husk, stalk, flower, and cob are purple"; and the leaf has a thin line of the same color down the middle. The ear is smaller than that of the white corn. Atole of this maize is "purple"; and for good measure, some cooks add a bit of the husk to intensify the color.

Maíz colorado.—At least three different kinds of corn are considered red by the Totonac. For two, our data are scanty, but for the third, they are full. Curiously enough, the latter red maize (iłkón) is not eaten by humans and seldom by animals, yet it is found in most of the fields because of its alleged magical properties. Supposedly, it protects the other maize from damage by "wind, sun, and eclipse; it is the father himself, the chief of the corn" (*el mero padre, el jefe del maíz*). Moreover, it is considered a remedy for whooping cough and other maladies.

a. iłkón. This red maize[37] is said to appear spontaneously in fields in which the large white corn is planted. Although the seed be all white, invariably the harvest will include some red ears. However, if the small white maize is planted, kernels from two or three ears of red are mixed with the seed, for the small white does not produce red spontaneously.[38]

Although it is steeped with lime, as are the other corns, it is said that the skin of the iłkón cannot be removed. Accordingly, the dough is "bad" and is, moreover, red. "The people want only white tortillas," hence iłkón is not used for maize cakes. Nor, as a rule, is it prepared as gruel, although sometimes a small quantity is mixed with white corn for this purpose. Some affirm and others deny that it is eaten by fowl; all agree that it can be fed hogs and horses; however, it is believed that "a pig will never fatten" if fed iłkón.

The plant and that of white corn (presumably the large white) are said to be identical in appearance. But when the field is dry, the husks turn slightly reddish. Therefore, until late in the season, there is no way of distinguishing iłkón from white corn, without stripping the husks from the ear. According to local reports, "the red corn is that which has the largest ear, that which weighs the most . . . it is the king of the ears."

b. toqoqkúši, ¢o¢oqokúši. This is another red corn which appears spontaneously in a field of large white. The pigment is said to be confined to the skin, which is removed when the grain is steeped in lime; accordingly, this particular red corn is satisfactory for tortillas. A specimen sent Dr. Anderson is described by him as similar to "a tropical cylindrical, aside from its color, which seems to be a very weak allele of P."

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[37] Concerning iłkón, Dr. Anderson writes: "All with red cobs and red pericarp, coloring which is due to the gene P. In various ears of the collection, this color varies from deep red to a light terracotta; the differences are partly due to maturity but are probably even more affected by various alleles of P. As a whole, the corn is like a tropical cylindrical dent, aside from a tendency to shorter ears, pointed kernels, and more tapering ears. The population diagram suggests a mixture of tropical cylindrical and Mexican pyramidal.

"Unlike the color of the purple corn, this pericarp color does not show in the embryo, consequently a white ear which has been pollinated wholly or in part by this red corn gives no indication to the farmer that a cross has occurred. Yet when these white kernels are planted, at least one half the resulting seedlings will bear red ears. Their pollen of course will help to carry on the trait for still another generation. These genetic facts help to explain why red (P) and variegated or mosaic red, though seldom characterizing a variety, are nevertheless so frequently met with in fields of white corn in Latin America. Once the red has mixed into a white variety it cannot be rogued out merely by inspecting the seed ears. However, it is so frequently said to have magic properties that deliberate seeding of a few red grains is probably fairly common in plantings of white varieties."

[38] In time, this practice probably will disappear because merchants in Papantla refuse to purchase obviously mixed corn. Owing to this pressure, two of our acquaintances in Tajín no longer mix red seed with their small white.

Moreover, one informant says that although the red iłkón does not appear in a field of small white, there is a lighter colored red corn which does crop up spontaneously. Since its pigment is confined to the skin of the grain, it may be used for tortillas. This light-red maize was mentioned by only one informant; we do not know its Totonac name, nor do we have specimens.

c. lakakíči, lakakíčis (laka, *cara;* kíciš, *arriera;* ant's face). This maize is variegated,[39] but informants class it with red corn. The name, of course, refers to the markings. Like iłkón, this maize appears unsolicited in a field of large white corn. We neglected to inquire if it protects the fields against the elements and if it is of medicinal value.

Concerning its utility opinion is divided. One informant maintains that it is eaten only by animals, because tortillas made from it are "dark." Another says that the skin is removed successfully with lime, and, since the grain inside is light in color, the corn is acceptable for tortillas.

Mixed colors.—In addition to the four basic colors described above, the Totonac recognize a series of mixed colors, as follows:

a. čálan, or *maíz pinto.* This is believed to result from the crossing of white, yellow, and "purple." As far as we know, nobody in Tajín makes a practice of growing this corn, but it is said that if *maíz pinto* is planted, the harvest will be "pure white, mixed,[40] and a weak red."

b. kólon. This is described as a "spotted" corn which results when white maize is contaminated by red. "From the white maize come certain ears which have hard, brownish grains which look rotten. But they are not. If one cuts them, they are white inside. This maize is called kólon."

We have seen only one ear, which was so obviously defective that we did not collect it. The ear was dwarfed and the grains a curious light-brown color. Needless to say, this maize is not planted, but appears occasionally as a sport or as a diseased form; according to one informant, it crops up most frequently in a field of small white corn.

c. iškálni *dios* (*sangre de dios;* God's blood). Allegedly, this is another result of a cross between white and red (iłkón). The kernels are said to be striped, as though smeared with blood.

d. Still another mixed corn[41] has, according to informants, no name, either in Totonac or Spanish. When planted, the resulting maize is mixed, with some ears white and others spotted (*pintitas*).

This exhausts, as far as we know, the corns planted in Tajín at present. In 1947, we collected a small series of samples, which were sent to Dr. Anderson. He expressed particular interest in the red and "purple" varieties, hence in 1948, our collections consisted chiefly of them. In the meanwhile, it turned out that none of the 1947 specimens was viable, apparently because of overzealous fumigation at the border; but this news did not reach us until the 1948 season was past, and there was no opportunity to replace the samples.

Dr. Anderson's general impressions of the 1947 collection are summarized thus:

> As a whole, the collection shows no strong influence from any one place. It is definitely very Mexican, but the Mexican pyramidal influence is as weak as is the Mexican narrow ear. Two of the numbers look like fairly recent introductions from Guatemala. As a whole, the collection looks like average Mexican corn, with significantly more primitive South American influence than any other Mexican collections I have yet examined.

Concerning the 1948 collections, which consisted largely of *maíz colorado* and *maíz morado*, he writes:

> As a whole, the collection shows a strong central core of variation around 14 rows, cylindrical ears, big cobs, and rounded butts, with little tendency either to butt compression or to enlarged butts.

And he adds further:

> The collection as a whole centers around 14 rows and about grains which are fairly thick in proportion to their breadth. These are very old traits in maize and are not as common in Mexico as they are in South America. Moreover, the variety with the variegated kernel [lakakíči] seems to have the type of variegation which is common in South America but rare in North America. If it is not of this type, then it is a new type. It definitely is not the common type of variegation which is found in most Mexican and American Southwest varieties.

One additional point of general interest is mentioned by Dr. Anderson:

> The most important evidence, as far as the history of corn is concerned, is negative. By some route, the big butt, yellow kernel, broad kernel, big shank, 8-row of the Mayan area must have reached the eastern United States. But there is not the slightest evidence that the Totonac had anything to do with this diffusion.

THE MILPA

The maize field, or milpa (takučˀtok), is a sort of horticultural catch-all. It contains not only corn, but almost every other local cultivated crop.

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[39] Dr. Anderson comments: "Variety with variegated pericarp. This looks like the kind of variegation due to the mutable gene P^{var} and not that due to the gene P^{mo}, though the latter is common in Mexico and the former is very rare there, though common in South America."

[40] Concerning its mixed character, Dr. Anderson is agreed: "These are obviously rather impure. Ears cylindrical; husk compression in one; large cob; white cob; faintly colored pericarp; aleurone blue or colorless; endosperm white; denting regular shallow; mostly unwrinkled; no pointing. This looks like the wreckage of some old local variety, nearly obliterated by repeated contamination with such commercial sorts as *maíz blanco* [lanqakúši]. It could result from repeated crossings of the atole varieties [*maíz morado*] with commercial white corns."

[41] Dr. Anderson describes this maize as "tapering gently to the tip; large cob; purple cob; crowned red pericarp (P^{cr}); no aleurone color; white endosperm; very slight dent; no pointing. In both coloring and shape this is like many Guatemalan varieties and unlike most Mexican. I presume it to have spread out of Guatemala."

When cane is planted on a small scale, it is incorporated in the milpa, but if the quantity is considerable, it is grown in a separate plot. Vanilla is raised in the thickets of *monte bajo* and ordinarily does not share the field with other cultivates, but occasionally there is a scattering of vanilla in the milpa. Usually, a little garden adjacent to the family dwelling has a few fruit trees and an assortment of other useful plants, as well as flowers; but by and large, most of the cultivated plants are found in the milpa. Accordingly, the latter differs somewhat from our usual notions of a cornfield, and several descriptions follow:

a. Antonio Bautista made a sketch of his fields for us, a copy of which is shown in figure 8. His drawing is not to scale, but he estimates his milpa to contain 1.5 hectares, his cane field, 1, and his vanilla plantings, 2.5.

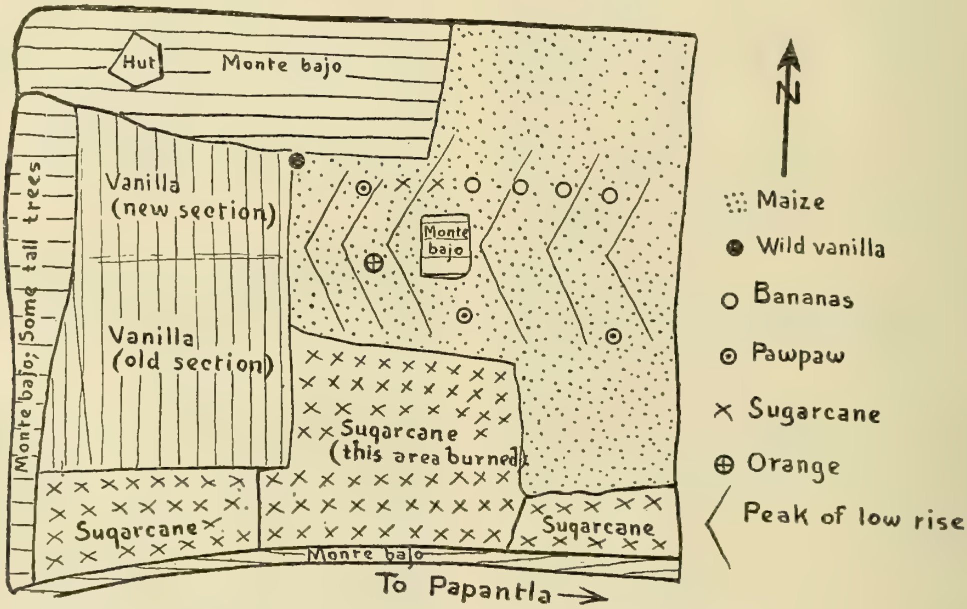

FIGURE 8.—A typical field. From a sketch of his plantings, drawn by Antonio Bautista. We have added the explanation of symbols and have given approximate orientation.

The sketch gives a good idea of the relationship between the milpa and the other plantings. Scattered among the maize plants there is a bit of cane, plus four banana trees, one orange, and three cultivated pawpaws. In addition, but not shown in the sketch, there is a plant of sweet manioc.

b. A small field belonging to Magdaleno Méndez occupies a steep slope adjacent to his house. It is predominantly given over to corn, which is dispersed, not in rows. In addition, the field boasts two squash plants and (probably one) sweetpotato; three or four mustard plants and about the same number each of beans and of a cultivated legume called *chipila* (No. 91). A few banana trees are dotted here and there. In addition, wild chili, tomato, and another solanum (Nos. 214, 24, 6) have been tenderly preserved in the course of cultivation. The entire assortment is interspersed and gives the impression of complete confusion. In all truth, this miscellany might better be considered a kitchen garden than a milpa, for the family's chief maize plantings are elsewhere.

c. Pedro Pérez likewise has two maize fields, a small one near the house, and a larger one, somewhat more distant. The small plot contains a varied assortment, including a patch of zinnias.

His chief maize crop comes from the larger field, situated on the east slope of a hill. Along the crest of the latter, and enclosing the entire field, is a row of banana trees. He is contemplating a shift in crops, from maize to cane, hence has planted the latter between the rows of maize. The cane still is small, but in another year, it will require the entire field.

d. The field of Rosalino González is on a slope which faces west and its content is more heterogeneous than any of the preceding milpas. A rough sketch of it is shown in figure 9, whose legend indicates what plants are dominant in each section.

Although the maize is planted in rows, the spacing is uneven. The distance between the east-west rows ranges from 0.95 to 1.40 m., and in this uneven strip, beans (*frijol majayán*) have been planted.

Scattered throughout the maize, in no discernible order, are the following:

Cultivates: papaya, sweet manioc, sweetpotato, onion, *cebollina* (related to the onion; literally, "little onion"), garlic, goosefoot (No. 75), mint (*hierbabuena*), and coriander.

Volunteers, spared during cultivation: the *coyol* palm (No. 362) and an annona, both of which produce edible fruit; the chili, tomato, and the solanum mentioned several paragraphs above; and a great welter of other items which, in time, will support the vanilla vine.

Some fields are square or rectangular, but most are extraordinarily ragged in contour, with odd salients here and there. Almost never is a field fenced; a fringe of *monte* usually bounds it on all sides and is sufficiently thick to keep out the neighbors' animals.

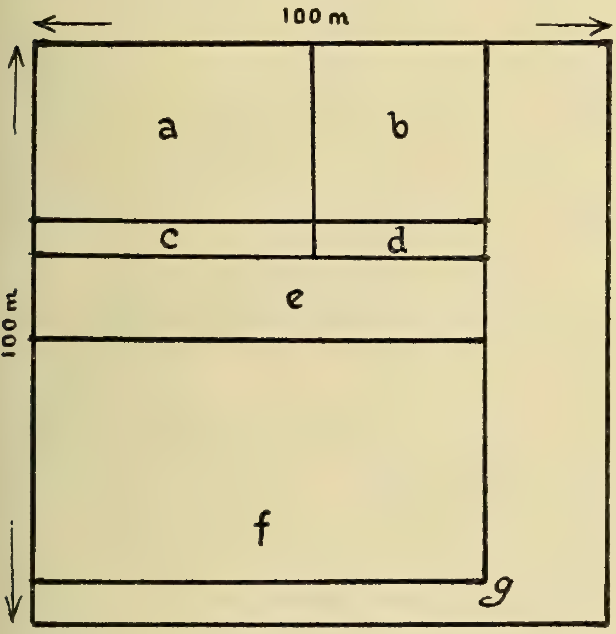

FIGURE 9.—A typical field. Diagram of the plantings of Rosalino González. *a*, New corn, already cultivated; dry stalks of the preceding crop strewn on the ground throughout the field. *b*, New corn, not yet cultivated; dry plants of the previous harvest still standing. *c*, Same as *a*, but with various kinds of bananas planted among the maize. *d*, Same as *b*, with the addition of assorted banana trees. *e*, New maize; scattered over this plot are bananas, sugarcane, *capulín* (not cultivated, but spared for vanilla support), and several vanilla vines. *f*, New maize, mixed with bananas, sugarcane; largely abandoned to *monte*. *g*, Abandoned maize field (*acahual*), now taken over completely by *monte*.

Two features contribute to the disorder which apparently characterizes a Totonac maize field. One is the fact that corn is harvested twice a year and the plantings generally overlap. It is customary not to clear the old maize before the new is started, and, in a field of young corn, the dry stalks from the preceding harvest (pl. 7, *c*, *d*) still may be standing—occasionally, in fact, may bear mature ears which have not yet been collected. Following the first cultivation of the new field, the dry stalks lie scattered on the ground among the young plants.

A second factor which makes for untidiness is linked with the maize-vanilla sequence of crops. Although theoretically a maize field can be replanted for a good many years, it is customary at the end of 2 to 4 years to convert the milpa into a vanilla field. Accordingly, as the corn is cultivated, care is taken to preserve all plants which, within a few years, will be useful supports for the vanilla vine. The result is that a maize field, although actually well tended, generally is full of volunteer shrubs and small trees, deliberately spared, with a view to future utility, when the shift from corn to vanilla is made.

AGRICULTURAL IMPLEMENTS

In large part, commercial implements have replaced the native ones. Steel axes and machetes are used to clear the forests, and cultivation is done with a metal *coa*. Nevertheless, the dibble—a simple pointed stick—still survives and with it are made holes in which the seeds are planted.

In the entire community, there is but one plow, a gift to the owner. It sits in dignity on the porch of his house, to be admired by visitors. But this implement never has been used in Tajín and nobody in the community has the slightest idea how to manipulate it. There are, of course, no oxen for draft, but there are mules. The Totonac give various explanations for their want of interest in the plow. One thinks that its use would be costly; another, that "the roots of the trees would impede the plow." Most frequently, it is claimed that plowing might eliminate the very useful volunteer crops of tomato and chili (p. 81). Undoubtedly there is a grain of truth in all these statements.

The first step in clearing land is to cut the lower growth with a steel machete, an outsized knife, of which four different types (p. 246) are current. All are commercial products manufactured in the United States. Two of the types are considered particularly appropriate for clearing land: the *machete de cinta*, for the low bush, the thinner *huaparra*, for higher branches.

Once the preliminary cutting is past, the trees are felled with a commercial steel ax. Next, with a machete, the branches are hacked from the fallen trees to facilitate burning. These procedures are described in detail in the following section.

Planting takes place on a bed of ashes, dotted with odds and ends of burned timber, and with charred stumps still standing. Manifestly, a plow would be of little use, and holes for the seeds are punched in the ground with a substantial stick (*espeque*, li·čán), pointed at one end. As he plants, the farmer may extract with this dibble the roots of particularly undesirable weeds.

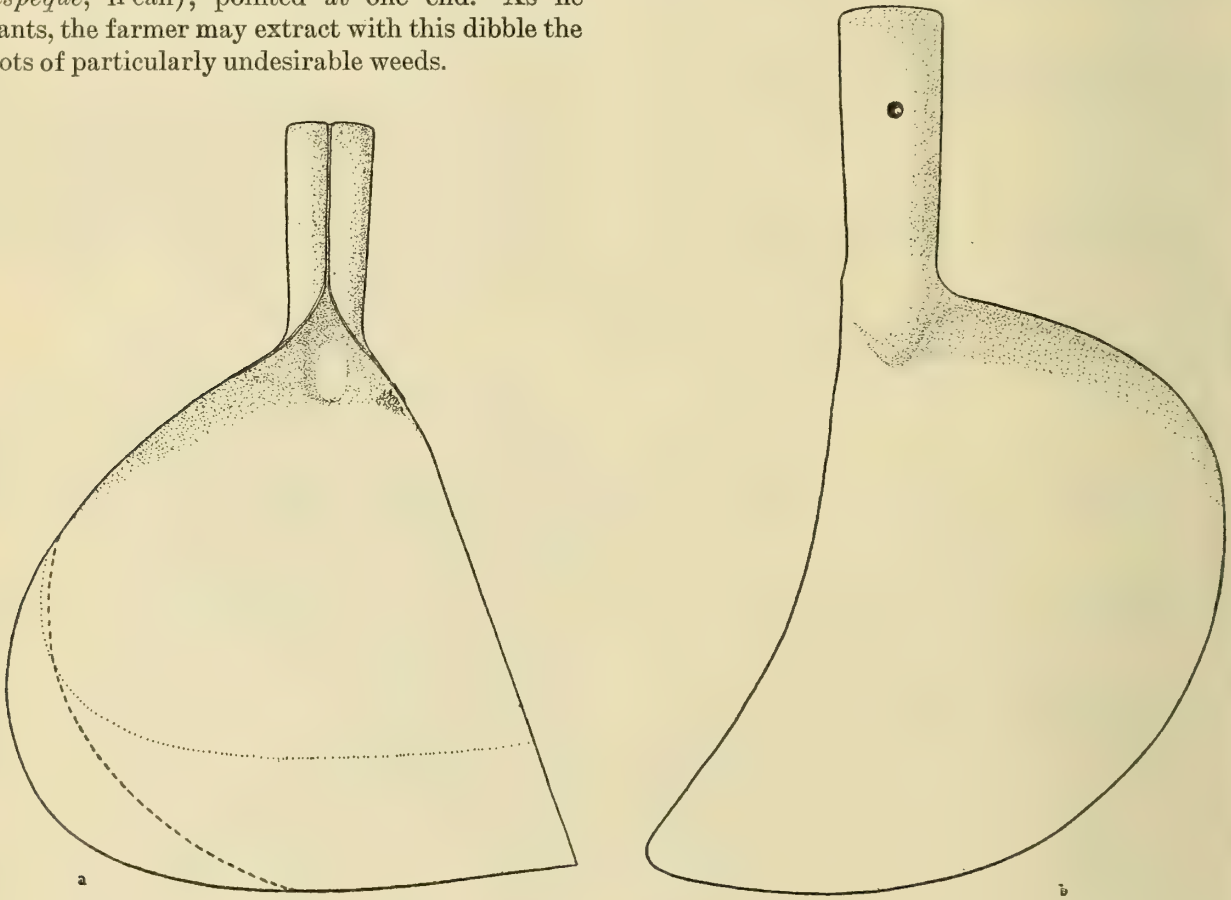

FIGURE 10.—*Coas* used in cultivation. Both of poor quality steel; purchased by us in Papantla. Light dotted line of *a* indicates division between blade and upper parts, latter painted black. Heavy broken line shows where the Totonac have the *coa* cut, for local use. Height of *a*, 35.5 cm.; *b*, same scale.

For a man, the dibble is about 3 yards (*varas*) long; for a woman, 2. So that the wood may dry, the pole is cut about 2 weeks before planting. It is a straight sapling of hard wood—generally of *zapote chico*, *guayabillo*, *huesillo*, or *pimienta* (Nos. 191, 208, 330, 30). Sometimes the stick is salvaged from the field which has been burned for planting; the whole instrument thus is fire-hardened, but it is said that the point alone is not treated by fire. Some protect the point with an iron casing, made to order by a smith in Papantla; if this is used, the dibble may be of any kind of wood.

The *coa* (čana) [42] is the implement used for cultivation. It is a broad, flat metal blade (figs. 10, 11) made in one piece with a sheath into which a long wooden handle is fitted, in the same axis as the blade.

Coas sold today in Papantla are of two general forms. One is a broad blade, with an almost straight line from sheath to point (fig. 10, *a*). This type, known as the *tarpala* (palkačana), must be cut down considerably before it can be used locally, owing to the profusion of tree stumps and roots in the field. The other type, the *coa de punta*, is somewhat narrower, with a concave curve from sheath to tip (fig. 10, *b*). Both have a cutting edge along the convex side, from the point almost to the sheath. Through wear, the shape is modified and the dimensions of the instrument are reduced. In figure 11 is shown a variety of forms noted one day among the worn *coas* being used in the course of communal labor.

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[42] Angel Palerm has noted a suggestive resemblance between the native terms for *coa* and scapula. For the former, Patiño (p. 33) gives chánat; for the latter, chana. An informant whom we asked, says that coa is čana; the human scapula mak čana (mak from makni, body). This suggests that the prototype of the metal *coa* may have been a hafted scapula, such as is known from native groups farther north.

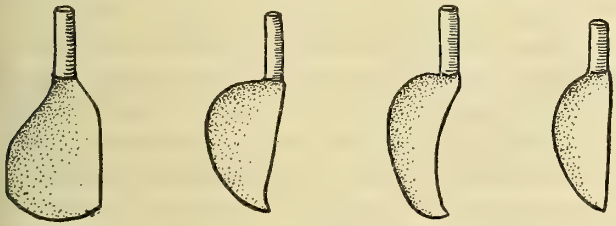

FIGURE 11.—*Coas* used in cultivation. Sketch, not to scale, showing the variety of shapes found among used *coas*.

Theoretically, the *coa* is of steel, but some current offerings in Papantla are of poor-grade iron. Formerly, one lasted 10 years; nowadays, if the *coa* hits a tree trunk, the point may snap or the sheath break. All Totonac farmers complain that the merchandise available at present is of inferior quality. The price ranges from $2.50 to $8.00 pesos; $4.00 is the usual price for one of moderate quality. However, the blades sold in Papantla are too wide for local use, and the Totonac must pay an additional peso to have the instrument cut down to effective size.

PREPARATION OF THE FIELD

Little virgin forest remains in Tajín, and virtually every new field which is planted involves clearing *monte bajo*. While this name suggests a forest of modest proportions, after 10 or 12 years, the vegetation is of very respectable size. In plate 6, *a*, *b*, a clearing is being made in *monte bajo* which has grown undisturbed for close to 30 years. The timber is impressive, as is the underbrush.

Clearing takes place in April or May, or at the very latest, in June. Even if one is not going to plant until the following winter, it is necessary that the field be cleared during the spring. Otherwise, the felled *monte* does not dry sufficiently to burn. One of the saddest maize fields we saw in Tajín was one which had been cleared out of season. Negotiations for renting the land were protracted and dragged through the summer. Accordingly, the *monte* was cut in October. It did not burn well and the field was covered with half-burned trunks. Before he could plant, the farmer was obliged to "sweep" (*barrer*)—that is, drag a great quantity of loose odds and ends of unburned timber to the edges of the field.

Ordinarily, clearing consists of four steps:

Rozar (tampíqanakan).—This name is applied to the first step, which involves cutting the small growth from the forest to a height of about 2 m., or as high as one can reach. All vines, shrubs, small trees, and the lower branches of larger trees are cut. Trees with a trunk diameter of 10 or 15 cm. or more are left standing, for later attention (pl. 5, *a*). Generally, the farmer performs this operation unaided, working with a machete, which he swings much as we handle a tennis racquet—for a cut, a drive, or a backhand.

To clear a *destajo* (ca. 1.5 hectares), which is the usual size of the maize field, one man working daily at normal speed requires about 20 days, if the *monte* is thick; otherwise, 10 to 12 days suffice.

Tumbar (λaminankán).—The second step, which may follow directly upon the first, is to cut the trees which remain standing. Small trees are hacked with a machete. Inasmuch as the undergrowth has been removed in the course of the initial clearing, there is room to handle the ax, which is required for larger trees (pl. 6, *b*). If a certain tree provides desirable wood, it is cut near the ground; if not, it is chopped at the height of about a meter. Trees are not girdled, as among the Maya (Morley, p. 143).

Ordinarily, one calls upon eight or nine friends to assist in felling. Arrangements vary; generally, some are paid in cash, by the day; others work on the basis of *mano vuelta*, which means that the host is under obligation to give work in return. In the latter case, no money changes hands. Regardless of arrangements, the host provides breakfast and a *mole* dinner for all those who assist. He is not under obligation to furnish supper, although in the afternoon, coffee or fermented maize gruel may be served. The hospitality extended to the coworkers is similar to that described below, for the day of planting, although less lavish.

Picar (lʌka·nʌnkán, lakawili?).—The third step is designed to "level the rubbish" so that it will burn thoroughly. If odd branches of the fallen trees extend high in the air, they may escape the fire. They are cut in sections, and trunks also are cut, provided they have fallen in such a position that they may not burn well. In short, the rubbish is slashed in such a manner that it forms a more or less even layer over the ground.

In years of extreme dryness, it is not necessary to *picar*, but generally this step is advisable. The task is performed unaided, or friends are asked to assist. For the combined chore of felling and "leveling," 15 to 18 days are allowed.

At this time, any timber which is to be salvaged is dragged away. Firewood also is cut. Some cut sufficient for their own use; some hire a man to do the job; others cut to sell; still others sell the wood, and the purchaser attends to the cutting.

Quemar.—Burning is the fourth and last step. After the *monte* has been leveled, it is allowed to dry at least 2 weeks, generally more, dependent upon the weather. Firing must take place before the heavy rains start, or the debris will not burn.

During these 2 weeks, a belt is cleaned around the edge of the field and all vegetation—green or dry—is removed, so that the fire will not spread to the surrounding forest. A similar clearing surrounds any particular tree in the field which is to be spared—a cedar, for example. In addition, some cut saplings and lean them vertically against the trunk of the favored tree, to protect it from the heat.

When the *monte* is sufficiently dry and when the fire lane has been completed, the debris is burned. Unlike the Maya, who consider a stiff breeze necessary (Morley, p. 144), the Totonac select a windless day, to avoid danger of general conflagration. Fires are started at several spots along the edges of the field, with the aid of corn husks and dry palm leaves.

After the burning, the field is ready to be planted, immediately the rains start. If one delays, subsequent clearing may be required, for the *monte bajo* sprouts with incredible rapidity. The half-burned branches which remain strewn over the field (pl. 5, *b-d*) are, in the course of time, hauled to the house, to serve as fuel. The charred stumps are left in place and the planter avoids them as best he can.

PLANTING

Once the field is burned and the rains come, the time is ripe for summer planting. The actual day depends upon two factors other than the rain: the religious calendar and the phase of the moon.

The planting season is thought of in terms of the church calendar. For example, one plants following St. Peter's Day (June 29) and prior to the Day of Our Lady of Carmen (July 16), or perhaps even as late as the Day of Our Lady of the Snows (August 5). Within these time limits, the Totonac farmer usually selects for planting the day dedicated to a favorite saint. St. Isidore, generally considered the patron of agriculture, receives scant attention in Tajín, perhaps because he is so strongly associated with the plow.

Moreover, it is judicious to take into account the state of the moon, although there is no general agreement as to which is its most favorable phase. Some recommend planting when the moon is waning, others, when it is full. Some plant 3 or 4 days before the full moon. If one waits until that satellite reaches maximum size, "then it is waning when the field sprouts. In any case, there is a crop, but it may be less plentiful." Most think that the moon has very particular bearing on fruit trees; Modesto González suggests that it is closely associated with the successful planting of vanilla and flowers, such as rosebushes. As far as he can see, his corn crop is the same, regardless of what day he plants.

There are two maize crops a year, and fall planting is governed by substantially the same considerations. Many, perhaps most, plant the Day of St. Andrew (November 30). Lauro Ramírez prefers this date, but last year, because of the moon, he was moved to plant 3 days earlier. The Day of Candlemas (February 2) is considered the latest possible date for planting.

So little time elapses between harvest and planting that the storage of seed presents no problem. The best ears—the largest and the fullest, without hint of malformation—are set aside for seed and are not shelled until planting time. If the crop has been mediocre, an exchange or a loan is arranged with a more fortunate neighbor. Under no circumstances is maize seed purchased outright, "for it will not produce."

Kernels from the tip and the butt are considered unsatisfactory for seed, and the latter comes from the central part of the ear. Before planting, the corn is shelled and is placed with water in a wooden tray (*batea*). If the container is of harder material, such as pottery or metal, the resulting maize crop "will be hard, and difficult to grind on the metate." On top of the soaking corn are stuck two unlighted candles (of the wax of the Old World bee), each supported by a corncob.

The following day, the seed corn is placed in a box lined with leaves of banana or of *papatla* (No. 128), and more leaves are used as a cover. The box is moved to the sun for a day, and with the heat, the corn starts to sprout. When the root is visible, the maize is sprinkled with a solution of creolin or coal oil to protect it from the ants (*hormigas*). In the meanwhile, the candles are moved to the family altar, but they are not lighted until the following day, when planting takes place.

Some plant corn without this forced germination "so that it will endure drought. If the corn is soaked, it may not grow; or it may grow upside down."

Men generally plant the corn. Women are not prohibited from doing so, but "it is not their work; a woman might plant a liter of maize, but she would not plant by *almudes*," that is, on a large scale. The Totonac farmer generally has the assistance of 8 or 10 friends in planting. As in felling, they may work either for wages or on the basis of *mano vuelta;* but they are treated as guests, not as hired hands.

Even though a newly cleared field[43] be littered with half-burned timber (pl. 5, *b–d*), almost invariably an effort is made to plant in rows (*surcos*). Ideally, the distance between the rows is about 1.5 m. This length is measured on the dibble and a scratch or groove is cut, so that the digging stick serves as a measure. A pole may be set up at each end of the field, and the farmer sights across the two, to aline his row. Or a single pole may be stuck in the ground at the far end of the row, and the farmer walks toward it planting as he goes, taking two short steps after each hole opened by the dibble. After the first harvest, planting is simplified considerably. There is less debris in the field, and the dry maize stalks of the previous harvest delimit the rows. The new seed is planted between the rows of the old crop.

If the field has been planted previously, 8 men usually can sow a *destajo* in one day; some, however, reckon 14 men. Nemesio Martínez calculates that with 15 men he can plant 2.75 *destajos* in a day. However, if a new field is involved, because of the time and effort devoted to alining the rows, the work is at least double. This means, not 2 days of work, but double the number of assistants, for planting is completed in 1 day.

If a field is rectangular, rather than square, the rows run the width of the field, not the length, because "the shorter the row, the more likely it is to be straight." If a field is on a slope, planting starts at the lower, left-hand corner, regardless of cardinal directions. The men form a line, abreast, each with his digging stick, and each at the foot of a row. They then proceed uphill, each planting his own row, and the group more or less abreast. There is much sprightly banter, generously sprinkled with conversational obscenity, as each one tries to complete his row first. The planting is not unlike one of our obstacle races, both in procedure and in spirit of friendly rivalry. When all finish their respective rows, the group troops downhill, to what might be called the base line, and planting is resumed.

Holes for the seed are made with the dibble, and undoubtedly there are good many individual variations in the manipulation of this instrument:

> One man holds it in his right hand and gives two or three sharp thrusts with the point. With the first, the hole is opened; with the second, the ground is broken and loosened, using the stick as a lever; with the third, the soil is further loosened, by working the stick from side to side several times. In the resulting cavity, grains of seed corn are dropped from the left hand, and, with the stick, the soil from the same hole is knocked lightly over the kernels. The foot is not used, as among the Maya, and, in fact, the latter seem formerly to have covered the cavity with the stick (Landa, p. 111).
>
> Another Totonac farmer jabs the soil with the dibble, which he holds in the right hand. He then transfers it to the left hand, and, with the right, drops the seed into the hole. He, too, uses the stick to push the earth over the grains. If it has rained little and the ground is hard, the dibble is grasped in both hands. It is thrust into the ground a couple of times, then is worked with a gyratory motion, to loosen the soil.

Maize is planted at a depth of one *jeme* (ca. 20 cm.). Some drop three kernels into the hole; others, four or five; "hired workers may plant six or seven, because they are drunk," as a result of excessive hospitality on the part of the host.

Seed corn usually is carried in a maguey fiber bag which is slung from the left shoulder and hangs at the right side, level with the waist. This bag is a commercial product, manufactured in the Huasteca, and sold in Papantla. It is a recent innovation and has all but replaced the old gourd container (pu·čan), with two holes for suspension and an aperture to admit the hand. A few still use the gourd, which is hung by a cord about the waist, toward the right side. We heard no mention of a seed container made of an armadillo shell, such as Starr (p. 255) describes for the Tlacuilotepec-Pahuatlán area, apparently among either Otomí or Mexicano Indians.

Those who assist in planting are treated as honored guests. In the morning, before breakfast, a *copita* ("a little snifter") is offered each, and the bottle of alcohol (*refino*) is left on the table, so that, subsequently, each may serve himself. Breakfast consists of bread (generally purchased in Papantla, or made locally, by special order), beans, rice, tortillas, and either coffee or chocolate. If the family is in a position to make a special gesture, the chocolate is made not with water, but with milk, which is purchased in Papantla or Tlahuanapa the previous day. Following breakfast, there is another round of *copitas*, and cigarettes are passed.

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[43] A new field is known during the first year as a *roza* (kanan ˀkán); thereafter, it generally is considered a milpa (takučˀtok, takúštukˀ). Milpa has dual meaning. In the sense just given, it refers to the field where the corn is planted. It may also refer to the maize itself, in which case, the Totonac equivalent is čawɔt.

Planting season, summer or fall, is called čánʌtˀ.

Thereafter, the party proceeds to the field. Each carries his dibble and, in his magney fiber bag, some of the germinated seed. The balance of the seed is borne by the owner.

About 11 o'clock, the attentive host passes alcohol to the guests in the field. In early afternoon, dinner is served, both preceded and followed by further *copitas*. The main dish invariably is *mole*, made with turkey, chicken, or pork. Rice and *atole agrio* (fermented maize gruel, of "purple" corn) complete the meal. In the late afternoon, coffee is served; "Mauro Pérez is the only one who serves bread both in the morning and the afternoon; in the other houses, one is given only coffee." This may be because his wife is one of the few in Tajín who knows how to make bread and who has an oven for baking it. The calculated costs on the day of planting are given elsewhere (p. 122).

Planting is far from grim. In the house, there is a great bustle, with neighbor women come to give a hand with the preparation of food. The family altar has been decorated, and some time during the day, a religious singer (*cantor*) may come to chant and pray before it (see below).

In the field, a jovial spirit pervades, in part owing to generous tippling. All the men are recently bathed and are dressed in clean clothing, invariably white. This is an obligation, because "*a los que van limpiecitos a la siembra, les sale el maíz limpio; a los chorreados, les sale podrido*"—to those who go clean to the planting, the maize turns out clean (well); to the grubby ones, it turns out rotten (that is, rotted on the ear). Some wear their most festive raiment. Not only is a bright, decorative handkerchief tied about the neck, but one may even adorn the sheath of the machete.

There are a number of ways of contributing to a good harvest. Many believe that a heavy crop results if ears of corn are hung from the rafters of the house, in front of the family altar, and, in a good many homes, such maize is more or less a permanent adornment. In no case, however, does this seem to be the corn used for seed. Never is maize taken to the church or to the priest to be blessed, but in many homes a certain amount of Catholic ritual is associated with the day of planting.

The family altar is decorated with flowers and woven palm "stars" (p. 223–224). On it is placed about a liter of the artificially germinated corn, which is not moved until the maize in the fields is "quite tall," when it is fed to the chickens. Copal incense and candles made of the wax of the introduced (not the native) bee are lighted on the altar, and a food offering is placed on it—for each image, rice, a dish of *mole*, perhaps some bread, a glass of water, one of alcohol (*refino*), and a cup of maize gruel. The food is identical with that which is prepared for those who are to plant the field. "People say that the food on the altar is for the dead; they really mean that it is for the spirits (*ánimas*)."

To be on the safe side, the devout arrange for the services of a local *cantor*, or religious singer the day of planting. He chants a series of rosaries (*rosarios*)—sometimes two, sometimes four, for each of which he charges $2.00 pesos. During planting season, he may be in considerable demand, hence is not always available for an early morning service, which most prefer. In that case, he comes later in the day; "a *rosario* is useful at any hour." Prayers are addressed "not to St. Isidore, but to St. Raphael, or to any other saint in the house." For good measure, a number of rockets are set off.

Sometimes, to insure a good harvest, either of maize or of vanilla, a special mass is sung—for St. Anthony, St. Joseph, or St. Isidore—and a cross is erected on the highest hill near the planting. This involves bringing a priest from Papantla, who charges $25.00 pesos for the simplest mass. The expense is shared by a number of farmers. More commonly, the Tajín planter is content with local, Totonac talent, in the form of the *cantor*. It is said that religious observations the day of planting now are less frequent than they were years ago. Now "some only sow corn; they do nothing else."

No religious services take place in the field the day it is planted, and no sacrifices or offerings of any sort are made. However, in the sixteenth century, the Totonac of "Cempoala" associated human sacrifice with fertility. When he was deprived of five slaves whom he intended to sacrifice, the chief of "Cempoala" lamented that "all our plantings will be eaten by the worms, destroyed by hail, and consumed by drought, or flooded by the torrential rains because we have ceased the sacrifices" (Mártir, p. 337).

REPLANTING

Not all the seed grows, and by the end of 8 or 10 days, it is evident how many plants there are to each clump. Accordingly, it is customary to replant (*resembrar*), that is, to add seed to the clusters which are incomplete. For replanting a *destajo*, 4 liters are necessary if there is a considerable deficiency; otherwise, about 3.

Some use dry seed for the major planting, but all think it is advisable to speed germination for the replanting. As before, the seed is soaked. Since the quantity is not great, it is not placed subsequently in a box in the sun, but is wrapped in banana leaves, and the bundle hung from the rafters of the kitchen, where there is sufficient heat to cause germination.

Replanting takes place but once. As before, a hole for the seed is punched with the dibble, but only in the clumps which are incomplete. Despite replanting, the clusters in a mature field are far from uniform, and may have from two to four plants. Since maize generally does not tiller in Tajín, each stalk represents a seed. Occasionally a secondary stalk is produced, but "it is of no use; it is small and ill-formed."

CULTIVATION; WEED COMPETITION

"Once the field is planted, there is no more to do, except keep it free of weeds"—a chore of major proportions. Both men and women weed (*escardar*), and generally the owner of the field, accompanied by assorted members of the household, works daily at this never-ending task. For example, in the field of Pablo González, his wife, a stepson, and one or more of his three stepdaughters generally are to be found cultivating.

In addition to daily cultivation on a small scale, there are several major weeding bouts during the season. Some have a complete clearing of the field every 2 months; others, once a month. Upon these occasions, about the same number of friends is invited as for planting, and the host is under similar obligations as regards hospitality. Nemesio Martínez, who plants 2.75 *destajos* in a day, with the assistance of 15 men, calculates that the same number of workers requires 2 days to cultivate the same plot. In short, he considers the work is about double that of planting.

Some recommend weeding by hand or with the machete, because "the *coa* may frighten the maize so that it does not grow." All our acquaintances, however, cultivate with the *coa*. With it the weeds are removed, and the soil about the maize is stirred lightly. Never is the earth heaped about the base of the corn, and technically the Totonac do not raise maize in hills.

The *coa* is handled according to a well-established pattern: If it is held so that the side with the blade is on the right of the worker, then the right hand grasps the handle near its upper end, and the left hand is about half way down the stick. However, if the blade is to the left, the position of the hands is reversed. The uppermost hand is the one which exerts most strength, and sometimes the position is reversed, so as to rest the arm; in that case, the cultivator shifts his position in the field and faces in the opposite direction. Regardless, the body is well bent, because to be handled effectively, the *coa* must form a very sharp angle with the soil.

Weeds which are especially troublesome include: *mozote blanco* (No. 325), *coyolillo de ratón* (No. 311), *zacate de venado* (No. 288), *malva* (Nos. 58, 355), *lechuguilla* (No. 93), *sandía del ratón* (No. 360), *berenjena* (No. 60), and the unidentified *hierba del sapo*, and *yerba mala*.

Most weeds simply are sheared off close to the ground. However, grass and certain persistent weeds which do not have very deep roots—*mozote*, *malva*, *yerba mala*, and *berenjena*—are yanked out. They are left lying where they fall and presumably, in time, serve as fertilizer.

However, every man who cultivates a field has tied about his waist a gourd, with two perforations for suspension and with a roughly quadrangular aperture cut for the hand. Into this receptacle he carefully places the seeds of particularly troublesome annual weeds, in the vain hope of eradicating them. It is said that a fiber bag seldom is used "because it might be ripped and the seeds would fall in the field." These seeds are not burned but are tossed into an abandoned maize field (*acahual*, makatáman) allegedly to speed the growth of the *monte*, so that the plot may be available the sooner for a new clearing. However, what really is desired is the rapid growth of woody plants, not of annual weeds. Aside from the necessity of having the *monte* sufficiently heavy to permit a good burn, it seems likely that in Tajín, as in Yucatán, "tree growth functions primarily in choking out annual weeds" (Emerson, p. 10).

The preoccupation with weeds is such that one very good informant declared that those who enter a field to plant rinse their feet, to avoid carrying unwanted seeds into the milpa. But another, unacquainted with this precaution, was not impressed, remarking loftily that the seeds stick to the clothing, not to the bare feet. Probably for this reason, women who enter a milpa hoist their skirts about their knees.

Apart from annual weeds, the Totonac struggle with the *monte* which, despite chopping and burning, sprouts anew with astonishing vigor. New shoots are slashed with the machete to curb their growth, but *monte* plants are not removed by root.

The incursion of grassland is not a very serious problem locally, and the Totonac are far more concerned with the weeds listed above than they are with grass, although Morley (p. 153) declares the latter to be "the undefeatable enemy of *milpa* agriculture." As might be expected, several grasses are troublesome in the maize field—for example, *zacate fino*, *zacate de elote*, and *zacate salado* (Nos. 352, 353, 363). However, it is said that they do not make serious inroads in a milpa unless the *monte* is removed by root. In that case, they are able to establish themselves and may form a grass covering so thick that other plants have difficulty in penetrating the sod. Accordingly, it is "many years" before the woody *monte* is restored and before the forest is sufficiently large to warrant clearing for a new maize field.

As a matter of fact, this observation concerning the relationship between grass intrusion and weeding by root—made by several Totonac, although not all concurred—may be both valid and of considerable interest. At least, the data presented by Morley suggest that the same situation may hold in Yucatán. There, during 8 years, an experimental milpa was planted at Chichen Itzá:

> For the first four years the annual yield of corn rapidly decreased under the modern method of weeding, that is cutting rather than pulling up the weeds by their roots. The fifth year the experimental *milpa* was weeded the ancient way, by completely pulling up the weeds, removing even their roots. Under this more thorough method of weeding, the yield slightly exceeded even the first year's crop, but lost more than half the next year (the sixth year). It gained again in the seventh year . . . But grass, the undefeatable enemy of *milpa* agriculture, eventually crowded out the bush . . . in the closing three or four years [that is, from the 5th or 6th, through the 8th] . . . grass everywhere invaded this . . . tract of land so that it became more and more covered with a thick grassy mat, through which even weeds, to say nothing of cornstalks, could not push their way (Morley, pp. 152–153).

In short, the incursion of grass more or less coincided with the return to the "ancient" system of uprooting weeds.

Specialists are not entirely agreed concerning the role played by grass in modern Mayan agriculture in Yucatán:

> Steggerda (p. 92) observes that "sod does develop after continued use of a field"; but his report was published before the experimental planting in Chichen Itzá had terminated. When he wrote, the Yucatán milpa still presented no concrete evidence (p. 121). Morley's account presumably brings the sequel to a close.
>
> However, Kempton (p. 3) states flatly that at "none of the places visited either in Yucatan or Campeche does grass seem to be a factor in corn production nor in the reestablishment of the bush"; and he concludes (p. 7) that there "is no evidence that extensive areas of grass land with periodic burning suppress the forest in Yucatán."
>
> Emerson (p. 4) agrees that even "in very recently abandoned milpas little grass is seen, except in the extreme northern and western parts of the area [of Yucatán] visited. Here the many large henequen haciendas, in which the brush has been kept cut for ten to fifteen years, apparently return to bush less rapidly when abandoned and more grass is seen."

These observations apply specifically to modern Mayan agriculture, in the course of which weeds are not uprooted but are cut with the machete. The crucial point here seems to be whether Morley is justified in stating that the "ancient" way of weeding was to extract the weeds by the root. He cites no authority; but, if he is correct, it seems possible that the old system of Mayan agriculture opened the way to grassland and thus carried within it the seed of self-destruction.

PESTS AND OTHER CROP HAZARDS

Weed control is not the only problem which besets the Totonac farmer; birds and other animal pests also cause their share of worries. Some

Totonac go daily to the field, especially when the corn is young, to frighten the birds with rockets or with stones. This is the particular responsibility of the small boys of the family.

The *papán* (Appendix D, No. 25) is one of the worst pests. "It is a large bird that comes to the field and destroys the tassel; one must cut it so that another will form; otherwise the plant does not produce. Woodpeckers also destroy the tassel, as well as the young ears. Both these birds are killed with firearms; a trap is no good, because they do not light on the ground."

A scarecrow (*espantajo* [*sic*], limakáksan, limakáλan) also is used. Nowadays it is no more than two sticks set up in the form of a cross, with an old shirt draped on them. "Formerly scarecrows were made of corn husks, with arms and legs; on the head they put a hat." Or: "The grandfather of Matías Pérez used to make scarecrows in the form of a doll, out of dry banana leaves. He put a hat on the head and hung the figure in the field, from a tree or a long pole." From memory, Modesto González has drawn one of these figures, complete with headgear (fig. 12). Nowadays these works of art are scarcely remembered. As one lad says, "we no longer use them; I think the birds learned that they do no harm."

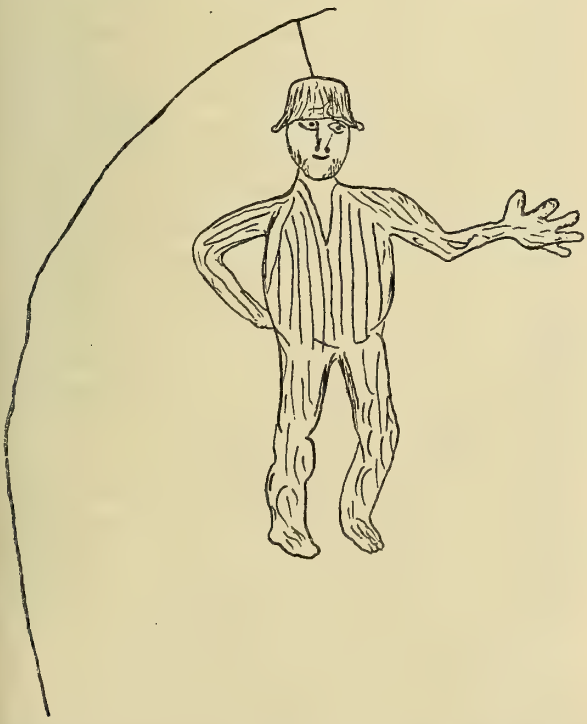

FIGURE 12.—Scarecrow. Tracing of a sketch by Modesto González, showing the type of banana leaf effigy used formerly in Tajín.

Traps are set for prairie dog intruders, or poison is bought for them. Squirrels and skunks are killed with a shotgun. Sometimes dogs assist in dispatching a skunk, but not all dogs will tackle one. A skunk may be killed also with a machete. To kill a fox or a raccoon, various dogs are required.

Natural phenomena—wind, drought, excess rain, hail, and eclipses—all take their toll of crops in Tajín. In March and April, strong, dry winds may break the maize plants. The corn itself announces the imminence of such a wind: "Yesterday the maize was sad and withered; today we have a dry north wind." When the plants are about to tassel, the wind may frighten them so that they do not produce. To avoid this disaster, one informant recommends blowing lustily in the field, using a cow's horn as a trumpet. Others form a series of crosses with ashes, to calm the wind. And, of course, the red corn which is growing scattered throughout the field is supposed to give further protection.

Drought is a recurrent problem in the spring, and sometimes the crops are literally lost—not only maize, but vanilla as well. Again, the red corn is supposed to protect the field, this time from excessive sun. The farmer does not rely exclusively on its power, but he generally lights a candle to St. Joseph, the Virgin of Guadalupe, or to the image known as the *Santo Entierro*. Moreover, each year, the community requests the loan of a miraculous figure of St. Joseph, from a neighboring settlement. The saint is well received and well entertained, and most of the dance groups give performances in his honor. If he is pleased with the reception, he is expected to intervene and bring rain.

When all else fails, the archeological stone idols are invoked. Those found in the fields are kept in the houses, generally on or beneath the Christian altars. In case of emergency, they are bathed, in an effort to produce rain. Some people carry jars of water to the archeological site and dash it over the large stone figure in front of the main pyramid. The treatment is continued until rains come; and if constant recourse is had to the idols, the rain generally is accompanied by strong winds.

Occasionally, excessive rain damages the fields. To halt the downpour, a palm which has been blessed on Palm Sunday is lighted and the house smoked with it; or the little pestle of the receptacle in which sauce ingredients are ground is placed on the hot coals. Hail sometimes falls in April and slashes the leaves of the corn, but usually the harvest is not affected; we heard of no technique for mitigating the effects of hail.

An eclipse, of the sun or of the moon, is bound to damage the corn, while its effects on vanilla, chili, and fruit trees are even more devastating. Concerning eclipses, there is considerable confusion and informants tend to attribute to them any crop failure for which there is no obvious cause. Most Totonac are fully aware of the dates of eclipses, because they are listed in the indispensable household almanac known as the *Calendario Galván*. One informant's statement may be regarded as representative:

> Now the ear of corn is about to dry; soon it will be ready to harvest. But I open the husks. Outside the ear looks well, but inside there are worms. It was an eclipse. There is the chili field, but the fruit is dropping. It was an eclipse. There are eclipses for corn and eclipses for chili. The one which we had was for corn, but that of next August will be for chili.

Against eclipse the chief protection for the corn is the red maize. For other cultivated plants, a red rag set up in the field or attached to the fruit tree is considered effective.

HARVEST

In a favorable season, the maize grows tall and luxuriantly—to a height between 3 and 4 m. As the ears begin to dry, they bend downward on the stalk with their own weight. It is said that some who plant on *tierra de vega*—of which there is very little in Tajín—deliberately bend the upper half of the stalk, together with the ear, for protection from birds. This is not good Tajín practice, and a local farmer disapproves, saying that with such treatment "the grains are very thin."

On the whole, local maize seems slow to mature. Informants vary widely in their estimates and, by and large, they are quite unable to calculate the number of days which lapse from planting until ears are sufficiently ripe to be prepared in the form of *bollitos*. However, every man knows what day he plants and generally he can give an approximate date for cutting the first ears. Even with these two relatively fixed points, estimates vary widely.

All, however, agree that the small white corn ripens 10 to 15 days sooner than does the large white; some informants include yellow corn in this early-ripening category. All likewise are agreed that, irrespective of the kind of seed involved, maize planted in summer ripens sooner than that planted in winter. The summer planting of the large white maize may produce in the course of 90 to 120 days, according to different informants. The range for winter planting is about the same, but more individuals give a higher figure.

By and large, summer planting (usually July 16) produces corn for *bollitos de elote* (p. 153) by All Souls' Day (November 2). And winter planting (usually November 30) provides edible fresh ears by early or mid-April. By the Day of the Holy Cross (May 3), corn is sufficiently dry to be prepared in the form of tortillas, provided the store from the previous harvest is exhausted and it is necessary to dip into the new crop.

The very first young ears are made into gruel (*atole*). Later, as the kernels become somewhat harder, the ears are roasted or the maize is prepared in the form of *bollitos*.

There is no first fruits or harvest ceremony. "We merely eat the corn; we give thanks to no one, and we light no candles." Modesto González was frankly astonished by the Huastecan practice, described to him by Roberto Pavón, of burying the first ears in the field. Nor is there any counterpart of the old Huastecan custom of smoking with incense the tamales made of new corn (Tapia Zenteno, p. 107). Furthermore, there is absolutely nothing to suggest the elaborate ceremony—not precisely a harvest ceremony, but certainly one strongly linked with fertility—which Starr (pp. 252–253) describes in some detail for the Totonac of Santa María, near Tlacuilotepec.

The new maize is collected gradually, over a period of weeks; little by little, it is brought from the field, as needed. In part, for this reason, most Totonac are surprisingly vague concerning the actual amount harvested. Many from *pura flojera* (sheer laziness), we are told blithely, allow the ripe corn to remain in the field a considerable time. For example, in April, Antonio Bautista was just getting around to gathering the last of the maize which had ripened the previous December. However, "it is not well to leave the corn in the field over a month, for it may be stolen, or the plants fall and the ears rot." The heavy rains may start before the summer harvest, and between rain and wind, many stalks are knocked down. The ears on the ground are collected first, or they sprout.

The general harvest takes place following a few days of sun and with the assistance of "a few friends," generally four to eight for a *destajo.* Again, the men work either for pay or on the promise of return assistance, and, as usual, the host is under obligation to feed the workers.

In harvesting, the ear is grasped in the hand and is twisted slightly to free it from the stalk. The ears are collected in small heaps scattered over the field and then are taken to a temporary shelter in the field, usually thrown together of palm. Invariably, maize is hauled on the back, in large commercial sacks; baskets are not used in harvesting, as in many parts of Mexico.

Both men and women gather corn and haul it to the granary. Formerly, the latter was built in the field, and the family drew on the stock from time to time. However, some fields are far removed from the dwelling (p. 61), and the neighbors likewise developed the habit of drawing on the cache. Now it is considered "more convenient" to store the corn in or near home base. The maize is collected in the temporary shelter until there is opportunity to transfer it to the more permanent granary at home. While the crop remains in the hut in the field, the owner generally stays on guard during the night. Granaries are described elsewhere (p. 203).

No husking pin is used. Maize is stored with the shuck and the latter is not removed until the corn is to be used—to eat, to sell, or to plant. Without the protective covering, the weevils soon infest the ear. Maize is shelled only as needed, a small amount every few days, with the assistance of the children. Generally the kernels are removed with the hands, holding the ear in one hand and twisting it slightly while, with pressure from the other hand, the rows are broken off and the kernels fall into a wooden tray or some other container.

A few use an *olotera* (*olote*, cob) for shelling. This consists of a large number of cobs alined vertically to form a disk, about the circumference of which a wire is tightly wrapped. Against the disk the ears are rubbed to remove the grains.

The dry stalk and leaf are left in the field to rot; they are not used as fodder, although the tassel often is cut for the animals. The cob (*olote;* in Tajín, usually *bolote;* šapásma) is used as fuel. The corn silk is put to no use, save that of the red maize, iłkón, from which a remedy for diarrhea is prepared.

The green husk from young ears is eaten by the animals, and the dry husk (*totomoxtle*, iškám) has many uses as a wrapping material.

PRODUCTION, LABOR, PROFIT

For a variety of reasons, it is impossible to obtain accurate figures concerning maize production. In the first place, during many weeks, corn is cut in the field as it is needed, so that when the general harvest takes place, a relatively large proportion already has been consumed. In the second place, corn invariably is stored on the ear and is shelled only as needed. Naturally, the total volume of shelled corn is known only in very special cases, when the entire crop from a field is to be sold. In short, informants themselves do not know the precise yield.

There is a further complication. A good many families were alarmed by our inquiries and feared that taxes might be raised if they appeared unduly prosperous. However, they responded frankly and in great detail to questions concerning the daily consumption of corn; likewise, to queries concerning the amount bought and sold. Apparently none realized that these data, calculated on the basis of the 6 months required for each harvest, would give a fair check on production.

In a number of cases, the alleged yield is only a fraction of the declared consumption. For example, the total maize requirements for one family, during 6 months, cannot be less than 12 *fanegas.* By their own statement, they purchased only 2 *fanegas.* Obviously, their field must have produced close to 10 *fanegas*, although they maintained that they harvested only 3. A more extreme case is provided by a family which consumes 30 *fanegas* every 6 months. It claimed to have harvested only 3 *fanegas* the winter of 1946. Of this, a small amount was sold, but the informant was uncertain of the precise quantity. Nevertheless, he artlessly admitted in late spring that the corn on hand would see his family through to the next crop.

In one case, at least, a marked discrepancy was explained satisfactorily. The informant was shown that his normal consumption exceeded his harvest, despite the fact that he insisted he bought no corn. Eventually, it turned out that he purchased no maize simply because, when the stock was exhausted, his family ate plantains or bananas instead of corn.

Probably most families in Tajín raise sufficient corn for their own consumption—and, at the same time, have relatively little surplus. Concerning purchase and sale of maize, we have information from 34 families (table 10). Naturally, the record is too incomplete to permit much generalization, but it accords pretty well with our impressions. A few families report a deficit each season; others say smugly that they never have to buy corn. Sales exceed purchases, both in total and by family average. Probably the 1946 summer crop is to be considered normal, but most farmers complain that the harvest of the following winter was unusually poor. The latter fact is demonstrated in table 10, the reduction being particularly evident in the sales, which total about one-third of the previous summer.

TABLE 10.—*Maize purchases and sales*

Purchases and sales	Following 1946 summer harvest		Following 1946 winter harvest	
	Number of families	Liters of maize	Number of families	Liters of maize
Purchases:				
None	25		22	
Purchased maize	[1] 7		12	
Record incomplete	2		0	
Total maize purchased		2, 232		[2] 2, 640
Range of purchases		96–792		120–576
Average per family [3]		319		330
Sales:				
None	18		24	
Sold maize	[1] 16		10	
Total maize sold		[4] 11, 520		[5] 3, 984
Range of sales		144–1, 728		24–1, 152
Average per family [3]		823		569

[1] One family achieved the unique distinction of functioning both as vendor and buyer. Through miscalculation, the summer crop was sold in excess, and before the new harvest, 100 liters had to be purchased.

[2] Total, range, and average based on 8 of the 12 families. For 3, the amount purchased was not determinable. The fourth case is special, because the farmer abandoned his milpa to *monte*, hence was obliged to purchase the entire supply for 6 months—in this case, 17 *fanegas*, or 2,448 liters. Inasmuch as this amounts nearly to the sum of the purchases of the other families, it was excluded.

[3] Average per family based not on total number of families, but respectively on those who have purchased or who have sold maize. The average would be far lower if all Tajín families were included.

[4] Total, range, and average based on 14 of the 16 families. One was uncertain of the amount sold. The other obviously was so far outside the normal range that inclusion would warp the situation as a whole. It sold 22 *fanegas* (3,168 liters)—almost double that of any other family.

[5] Total, range, and average based on 7 of the 10 families. Three sold in small quantity (by *almudes*, that is, in lots of 12 liters) but could make no estimate of total sales.

A few of the most prosperous families—perhaps 8 or 10 in the entire community—plant 2 or 3 hectares instead of the usual 1 or 1.5; accordingly, in good years, they are able to sell a considerable quantity of corn. Two such families are included in the list. One sold the summer harvest in such quantity that the sales were deleted from table 10 (footnote 4); however, winter sales were only one-tenth as great and are well within the normal range.

On the whole, most Tajín farmers do not sell maize. Those who do, generally market by the *fanega* (144 liters), but a few sell on small scale, by the *almud* (12 liters). If our sample is representative and if the summer crop is normal, we may say that most families with surplus corn are able to sell about 800 liters, or between 5 and 6 *fanegas* a crop.

Price varies widely, and it is difficult to appraise transactions in terms of cash. When the new crop is in, maize is abundant and cheap; toward the end of the season, it is scarce and expensive. In a single season, the price ranges from $15.00 to $55.00 pesos the *fanega;* probably $35.00 is a reasonable average. However, those with surplus corn usually unload early, at a low price, before the weevils make inroads; and those who do not grow sufficient for their needs feel the pinch toward the end of the season, when the price is high.

Although the Totonac farmer is vague concerning the amount of corn he harvests, he knows precisely how much he plants, for this is measured carefully. However, at the time our census inquiries were made, we were still not aware of the custom of replanting—that is, of planting subsequently to replace seed which has not germinated. As far as we know, the amount of seed reported by informants applies to the main planting only, but because of replanting, the amount actually sown consistently is somewhat greater than our figures indicate. Nevertheless, the liter of seed corn which is left on the family altar compensates in part, and it seems likely that the corn which actually goes into the field is about 2 liters more than our records show.

Concerning seed corn, we have data from 30 families, but not all are usable, for occasionally the informant is unable to guess even roughly the size of the crop, or he does not know the extent of his field. However, for 25 of these 30 families, we can guess at the approximate yield per liter of corn planted.

Unfortunately, because of the ambiguity of measures, the yield per unit of land cannot be given. A milpa is described in terms of hectares or of *destajos*. The hectare is measured by meters and contains 10,000 sq. m. The *destajo* usually is calculated by *garrochas* of 2.4 m.; since a *destajo* is 50 by 50 *garrochas*, it contains a fraction less than 15,000 sq. m. Although the *destajo* is almost half again as large as the hectare, the two terms are used interchangeably in conversation. Some in Tajín deliberately reduce the length of the *garrocha* to 2 m., in which case, the *destajo* and hectare are equivalent. Others do not make this arbitrary correction, yet use the terms synonymously.

As a matter of fact, the amount of seed corn seems to be about the same, whether the field is reckoned by hectare or by *destajo*. For 1 hectare, informants' estimates range from 12 to 24 liters; for 1 *destajo*, from 8 to 24, with one case at 48. Most plant between 12 and 24 liters, which is precisely the range given for the hectare. Nor is there any significant difference in the amount of seed planted in summer and winter. Of 30 families, 3 plant a few liters more in the summer, and 3 plant a few more in the winter; the others sow the same quantity for both harvests.

While in actual practice, the amount of seed allotted to a *destajo* varies somewhat from farmer to farmer, anyone who is asked in general terms usually replies 18 liters, plus about 3 for "replanting." This ratio is so firmly established that sometimes land area is expressed in terms of seed corn. If one inquires, for example, the extent of a certain plot of sugarcane, the answer may be 3 *cuartillos* (9 liters)—meaning that 9 liters of maize would be required to plant the area in question.

For 25 families we have concrete figures of the estimated yield per liter of seed corn, as given below. Both harvests are from the year 1946, and in most cases, from precisely the same field.

Summer	*Winter*
20	18
24	120
28.8	76.8–96
36	21.3–24
36	48
38.4	48
40	24
40	24
54	48
72	48
72	64
76.8	76.8
80	---
84	48
90	28.8
96	60
96	96
104	96
115.2	72
120	---
144	72
144–156	72–96
144–156	72–96
216–240	240
252	252

Naturally, in such a small series, the yield varies widely. Some of the fields are new, hence presumably more fertile; others are on the point of being converted into vanilla plantings. In some the drainage is good; in others, not. Some are planted to the large white corn, considered of high yield.

Even so, the variation is extraordinary. For the 1946 summer harvest, the estimated yield per liter of seed ranges from 20 to 252 liters.[44] For the winter harvest, the range is about the same, from 18 to 252 liters. In 15 fields, the yield was less in the winter; in 3 it was the same; in 5 it was higher. Generally the summer harvest is considered the better and most regard the 1946 winter crop as unusually poor "because of too much sun and wind." Those whose yield increased presumably planted on relatively low, level land, with poor drainage—terrain which produces well only under special circumstances.

Obviously, the only way to obtain a reliable record is through a series of controlled plantings, over a period of years. Even allowing for a very wide margin of error, the above figures suggest a tremendous range in productivity, not only from one field to another, but in the same field, from one season to another. For reasons which will be evident later, it seems likely that the yield per liter of seed generally is at least 100 to 1.[45] The lower figures probably represent bad guesses, special circumstances, or, in the majority of cases, a deliberate effort on the part of informants to conceal the productivity.

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[44] For 1947, we have data from the field of Santiago Simbrón. Both his summer and winter harvests show a yield of 156 liters per liter of seed, despite the fact that he has grown maize continuously on this same plot for the past 7 years.

As a check on the preceding data from individual families, we have information concerning two fields which have been planted under more or less controlled conditions. One is a field tilled by communal labor, for the benefit of the school; the other is a field that is planted collectively by about a dozen men, as a commercial enterprise. In both cases, the amount of seed corn is known, and, since the entire crop from both fields is sold, the total yield likewise is well known. We are indebted to Juan Castro for these data, which are summarized in table 11.

At this point, some supplementary data may be added concerning the cooperative. The original group consisted of 13 men; before the first harvest, 2 withdrew, after having been paid for their labor and reimbursed their advance on the rent of the land. Some 7 hectares were rented on the Tajín-Tlahuanapa border, within the limits of the latter community. Of this, about a third was placed under cultivation, and measurements taken by José Luis Lorenzo, of our group, indicate that the field proper contains 2.3 hectares. This land is considered fair for corn but would be better if it had a more pronounced slope.

Clearing was completed too late to plant maize, and as a filler, beans were grown—with little success, however, since Tlahuanapa cattle apparently harvested more than did the cooperative. The first maize was planted in the summer of 1946, and the data below apply to the first crop, that is, to the winter harvest of 1946. Accounts were kept by Francisco Abundio Xochigua, the former school teacher, now deceased, who very kindly permitted us to copy his records.

TABLE 11.—*Maize yield from two fields*[1]

Item	School field; 3 successive harvests pooled (winter, 1946; summer, winter, 1947; 1st, 2d, 3d crops)				Cooperative field; 2 successive harvests pooled (summer and winter, 1947; 2d and 3d crops)			
	Hectares	*Almudes*[2]	Liters	Pesos	Hectares	*Almudes*[2]	Liters	Pesos
Size of field	3.3				2.3			
Seed, each planting		5	60			3.5	42	
Estimated total seed			180				84	
Total yield		1,801	21,612			849.0	10,188	
Yield per liter of seed corn			120				121.3	
Estimated yield, per crop			7,204				5,094	
Estimated yield, each hectare, per crop			2,183				2,215	
Total proceeds from sale of corn				$4,924.66				$2,976.18
Estimated proceeds, each hectare, per crop				$497.44				$647.00
Estimated annual proceeds, each hectare				$994.88				$1,294.00

[1] In neither case is the yield particularly high. Through theft, the school lost considerable corn, which is not included in the record. Moreover, members of the cooperative admit that their replanting was inadequate. In neither case should the crop be considered better than average, yet the minimum yield is 120 liters of maize to each of seed corn. The cooperative field shows a slightly higher yield and considerably higher cash proceeds, the latter because the maize was marketed to better advantage.

[2] The original entries are in terms of *almudes*, which we have converted into liters; our calculations are based on the latter unit.

He places the borrowed seed corn at 3 *almudes* (36 liters), not at 3.5, as does Juan Castro (table 11) for the two subsequent plantings. If we assume that this seed was returned, the accounts indicate a crop of 3,594 liters. As a matter of fact, the harvest probably was somewhat greater, for in the final financial settlement, of April 1947, adjustments were made which indicate that individual members purchased from the collective stock $115.50 pesos of corn more than is noted in the body of the record. Roughly, this is equivalent to 462 liters, which probably should be added to the yield, giving a total of 4,056. This is approximately 113 liters for every liter of seed corn—or about 1,763 liters (12.2 *fanegas*) for each hectare. In a good season, the Totonac farmer expects close to 15 *fanegas* a hectare.

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[45] There are comparative figures from Yucatán, where the Maya practice milpa agriculture. There, Morley (p. 147) calculates 9.5 pounds of seed corn per acre. The yield, "in general," he estimates at 17 to 25 bushels per acre (p. 154). Naturally, the weight of maize by volume varies with local conditions, but if we calculate a bushel of shelled corn at 56 pounds (information from Dr. Anderson), the yield is 952 to 1,400 pounds per 9.5 pounds of seed corn. This is, roughly, between 100 and 150 pounds per pound of seed. In short, the Maya and Totonac figures are well in accord.

Dr. Edgar Anderson writes: "In the United States corn belt one counts on a 300 to 350 fold increase per year. I expect that would be the maximum for any area of any considerable size."

This apparently is the maximum yield in a zone where maize production is highly specialized and is, moreover, characterized by the use of scientific methods, modern machinery, and improved seed. On the whole, milpa agriculture does not compare too unfavorably—especially since the Tajín figure is reckoned very conservatively as the minimum yield.

These figures for the first crop of the cooperative show a somewhat lower yield than that calculated for the two succeeding ones (table 11), presumably because the winter crop of 1946 was generally poor.

The same accounts provide the one demonstrable case of the amount of labor expended on a Totonac milpa. Each member of the group received $2.00 pesos for each day he worked. A total of 408 man-days was spent during the year, including clearing, burning, planting, replanting, cultivating, harvesting, and shelling. Presumably marketing also is included, for over half the crop was sold in Papantla.

It must be remembered that the above figure includes labor, not only for the first crop of corn, but also for a preliminary crop of beans. In short, the labor probably is somewhat less than it would be for two full crops of corn, but considerably more than it would be for one. Even if we halve the figure[46] and calculate 204 man-days per crop of corn, it is evident that the Totonac lavish relatively more attention on their milpas than do the Maya. For one group of the latter, it is calculated that a field of nearly 4 hectares[47] is tilled with an expenditure of 190 days of labor (Steggerda, p. 127). In short, the field is very much larger than the one Totonac planting for which we have data, while the labor involved is considerably less. We may say, on the basis of our one field, that labor, undercalculated, amounts to 88.7 days per hectare, whereas among the Maya, it comes to 48 days.[48]

We have no specific figures for the amount of labor expended on the average family milpa in Tajín. The Totonac do not appear to toil unduly, but they do not stint the time spent on their fields. In addition to outside assistance—in felling trees, perhaps in hacking the rubbish to uniform level, invariably in planting, in part of the cultivating, and not infrequently in harvesting—a man cultivates his field almost daily, during the growing season, usually with the assistance of assorted members of the family. If 88.7 days per crop for each hectare is at all reliable—and we think it somewhat low—then the average family field of 1.5 hectares would require about 133 man-days of labor for each crop, or 266 man-days a year. The seasonal distribution of agricultural activities is treated in Part 2, under the heading Work.

Although the accounts of the cooperative are not entirely clear, something can be said of the results of the first harvest in terms of cash. Of the original 13 members of the group, 12 advanced $5.00 pesos apiece to pay the rent; the thirteenth was Don Abundio, who was excused because of ill health and because he was to function as bookkeeper. A summary of his accounts follows:

Disbursements:

	Pesos
Rent of land (advanced by members, who later were reimbursed)	$60.00
Bean seed (16 kg.)	22.00
Labor (408 days @ $2.00)	816.00
Overpayment to various members, apparently through error	30.50
Unspecified disbursement	5.50
Profit ($18.75 to each of the 11 members who remained with the group)	206.25
Unaccounted for	60.90
Total	$1,201.15

Proceeds:

Sale of beans (75 kg. @ $1.00)	$75.00
Sale of maize (to members and others)	1,010.65
Additional sale of maize to members, implied in final settlements	115.50
Total	$1,201.15

Shelled corn was divided into three categories: good (*bueno*), that is, suitable for human consumption; half-eaten (by weevils) (*bueno-picado*), suitable for hogs; and eaten (*picado*), used only for fowl. For each lot, there were two prices, one to members and one to nonmembers. Prices per *almud* of 12 liters were as follows:

	To members	*To outsiders*[1]
Good	$3.00	$3.75
Half-eaten	2.00	3.00
Eaten	1.00	2.00

[1] The corn hauled to Papantla was sold by weight. It brought 46 centavos a kilogram, which informants reckon as roughly equivalent to $47.00 or $48.00 pesos a *fanega*. In the notebook of the cooperative, sales were recorded in *fanegas*.

The bulk of the crop was sold before weevils made serious inroads. Presumably all the maize sold in Papantla was "good." Of that disposed of locally, there were 116 *almudes* (1,392 liters) of good corn; 18 (216 liters) of half-eaten; and 28.5 (342 liters) of eaten.

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[46] This will offset any possible charge that, since the field was cooperative, there was a surplus of labor. As a matter of fact, some members of the cooperative felt that the field had received insufficient attention.

[47] Maya plantings are reckoned by the *mecate*, which is 20 m. square and which therefore contains 400 square meters. The average Maya planting consists of 99 and a fraction *mecates* (Steggerda, pp. 91, 113), which we calculate at 3.97 hectares.

[48] Moreover, the Maya figure includes the time spent in constructing the corncrib (Steggerda, p. 126), whereas ours does not.

The gross proceeds from the first crop of corn from this field of 2.3 hectares was $1,126.15 pesos, or $489.59 pesos a hectare, as compared to an estimated $647.00 pesos for each of the next two succeeding crops (table 11). The latter is considerably higher than the average of $497.44 for the first three successive crops in the school field (table 11). Since the cooperative obtained only a slightly higher production per hectare than did the school field, the difference lies chiefly in the fact that the cooperative was able to sell its corn to better advantage—in spite of giving its members a special low price.

It should be emphasized that a family milpa is considerably more productive in terms of foodstuffs than either of the fields just considered, since a great many things other than maize are planted in it, without reducing the yield of corn very materially. However, a family field also involves additional cost—that of feeding and entertaining the men who, from time to time, assist the owner.

Modesto González has prepared a careful estimate of the expenditures the day of planting—with 10 to 15 men in the field and about the same number of neighbor women in the kitchen. (The women are fed but otherwise are not reimbursed.) His calculations do not include maize for the atole and tortillas, presumably because a family is supposed to have a stock of corn upon which to draw. He lists individual ingredients of the bread and *mole* sauce, as well as other minute details, and the following is merely a summary:

	Pesos
Pork, to accompany the *mole* sauce	$28. 00
Sauce ingredients	10. 70
Rice, coffee, brown sugar	10. 70
Bread	25. 50
Chocolate	6. 30
Liquor	8. 00
Cigarettes	6. 00
Pay to workmen (10 @ $2.00)	20. 00
Incense, candles	4. 00
Rockets	5. 00
Religious singer (*cantor*)	4. 00
Total	$128. 20

This estimate is for "an elegant feast," as Don Modesto puts it, and most families spend considerably less. Yet many serve turkey instead of pork, and that is somewhat more costly.

The above calculations apply particularly to the day of planting. For other occasions—felling the *monte*, cultivating, or harvesting—incense, candles, fireworks, and *cantor* are dispensed with. Also, fare is more frugal. Nevertheless, coffee is served in the morning, and at noon, a dinner of *mole* or of rice and beans. Alcohol and cigarettes are passed, but no further food is offered in the afternoon. Even so, the cash outlay for each family per crop is considerable, and it is evident why only the wealthier families plant corn in excess of their needs. Capital is necessary—in the form of land, labor, and food for the latter.

VANILLA

Vanilla and sugarcane follow maize in economic importance, but since vanilla succeeds corn in the local crop rotation, it will be treated first.

Vanilla[49] is a climbing orchid, a vine with thick, fleshy stems and leaves. It produces a pale-cream blossom in spring, and by late fall, its seedpod is ready to be cut. It is picked green and undergoes a lengthy drying process, in the course of which it develops a powerful, aromatic fragrance. From the dry, dark-brown pods, commercial vanilla flavoring is derived.

A wild form, known as *vainilla pompona* (*Vanilla pompona* Schiede (No. 23)) also occurs at Tajín[50] and crosses freely with the cultivated form, sometimes accidentally, sometimes by human agency, for, presumably owing to a dearth of pollinating insects, the vanilla of commerce is hand-pollinated.

What little is known of the history of vanilla culture has been summarized by Bruman (1948). There are a number of sixteenth-century references to vanilla, which was used by the ancient Mexicans as a medicine and as a flavoring for chocolate, but there is no indication that the Papantla zone was an early source of supply. Vanilla is not mentioned among the tribute exacted by the Mexicans from the Tuxpan-Papantla area (Colección de Mendoza 5:87; Códice Chimalpopoca, p. 64) and, in fact, there seems to be no mention of vanilla at Papantla until close to the middle of the eighteenth century.[51] A statement by Villaseñor (1:318) implies that vanilla was cultivated near Papantla in the 1740's, but a document dated 1743, published by Bruman (pp. 373–375), states flatly that the vine is wild. It would appear that even as late as 1804, vanilla was of negligible importance at Papantla. A report from that year (Relaciones estadísticas de Nueva España, p. 45) states that the Indians "and the greater part of the *gente de razón* employ themselves in plantings of maize, beans, cane, and chili": it makes no mention of vanilla, although reporting it for Totonac Misantla and Colipa.

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[49] The vine, blossom, and pod all are called šanatˀ, the generic term for flower. Unfortunately, our herbarium specimens molded and could not be submitted for identification. It may be assumed that the local product is *Vanilla planifolia*, the vanilla of commerce (Hasselbring and Nash, in Bailey 3 : 3433).

[50] A second wild form, *vainilla cimarrona* is said to be found "in the mountains." Its flower is described as identical with that of the cultivated plant.

Under the circumstances, it seems likely that vanilla planting is a late development in the Papantla area. In fact, it may not have flourished until the introduction of artificial pollination, some time after 1840 (Bruman, p. 372). Early or late, in the Papantla zone today, vanilla production is firmly in the hands of the Totonac. They are virtually the only growers, and in their economy vanilla is of vital importance as a cash crop.

PLANTING AND CARE

Vanilla is an epiphyte but is said to require fertile, moist soil. There is some difference of opinion as to optimum conditions. Some say that vanilla grows better on slopes than on level land; "it yields more but the plants do not last as long." It does not grow well in an *aguachal* (a field with standing water), although it requires much moisture: "the soil must have a great deal of 'juice,' because the roots are on the surface."

Not everyone is fitted to grow vanilla. Some believe that one whose skin burns when the sap of the vine touches it will not be a successful planter. Moreover, some people have a "hot hand," and a vine planted by them will not grow. One may go to a *rezandero*, a functionary akin to a shaman, for treatment of this defect.

Vanilla is propagated by cuttings, not by seed. Cuttings about a yard (*vara*) long are taken from the old vines—generally from the ends which have grown so tall that both pollination and harvesting are inconvenient; however, "any part of the vine will serve." Bunches of 100 cuttings sold, in 1947, at $5.00 pesos the lot. Sometimes the price drops as low as $1.50; "it is very cheap if the owner needs money and nobody wants to buy."

The number of cuttings planted depends not so much on the area of the land as upon the number of shrubs and low trees available to support the vine. Low-growing plants are selected because vanilla grows best if it is not in complete shade and because, if the tree is tall, the vine climbs to inaccessible heights.

As supports for vanilla, the following are preferred: three distinct plants known as *cojón de gato* (Nos. 26, 138, 173; the latter preferable "because it gives most shade"), *cacahuapaxtle* (No. 87), *laurel* (No. 130), two kinds of *capulín* (Nos. 21, 85), and *estribillo* (presumably No. 61). Some consider the *laurel* the best of all; some prefer the *capulín* (No. 21) "because the leaves are cool."

The maize-vanilla rotation has been described previously, but it may be repeated that as a maize field is cultivated, all sprouting trees and shrubs which are suitable as vanilla supports are spared. At the end of a few years, these plants are sizable, and maize is replaced by vanilla. The artificial selection of plants associated with vanilla growing must have had a very considerable effect on second growth *monte* in this zone. For example, in parts of parcel No. 126, *capulín* comes pretty close to being the dominant vegetation.

Planting takes place some time between April and June, just before the rains start. With the metal *coa*, an excavation about 15 cm. deep is made at the foot of the tree or shrub on which the vanilla is to climb. The cutting is placed more or less upright in the cavity, but inclined toward the support. Its base is covered by leaves, or with some of the earth from the hole, care being taken not to pack the soil tightly.

Two cuttings, sometimes three, are planted to each support. Not all grow and perhaps only a third of the total planting is successful. Each cutting is not considered a separate vine, and ordinarily two are reckoned to a plant. Owners frequently count their vanilla holdings by number of plants rather than by area, although most know the approximate extent of the field, since previously it was planted to maize.

A vanilla field is known as a *vainillar* (kače netˀniˀ), and the number of plants per *destajo* may vary from 800 to 4,000. Few calculate less than 1,000 and most planters estimate between 2,500 and 4,000 plants. However, after a few years, one loses track; some plants dry, but sprout anew, and the vine spreads widely and takes root, giving rise to new plants.

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[51] In 1610, Mota y Escobar (p. 231) reports vanilla (*"Tlilxochitl"*) for Totonac Chumatlán, but the reference might be to either a wild or a cultivated form.

Except for pollination, which is very delicate and tedious work, vanilla requires a minimum of care. The field is not weeded. Supporting trees are hacked from time to time with a machete, so that they will not attain great height and so that a certain amount of sun may penetrate. Actually, to the uninitiated, a vanilla field looks precisely like a scrubby patch of *monte bajo*—as indeed it is. Underbrush is heavy and no effort is made to clear it.

The first year, the vanilla does not bloom;[52] the second, it produces a few flowers, but generally they are not pollinated—especially, if the vine "looks thin and somewhat yellow." In that case, it is left untouched, "to gather strength." Since a plant which bears too heavily dies, care is taken not to overpollinate young vines. Flowers are borne in clusters and even with a mature vine, not more than four to six blossoms of each cluster are pollinated. The maximum annual yield of a single vine is calculated very optimistically by informants at about 100 pods.

In late April or early May, the vanilla starts to bloom and for about 3 weeks produces a quantity of flowers. However, a given blossom is open only one morning and must be pollinated at once. During these weeks of spring, men, women, and children go almost every morning to work in the vanilla fields. Some families hire additional help, at $5.00 pesos the morning, the workers being local residents who have little or no vanilla of their own to tend.

To pollinate, the blossom (pl. 8, *a*) is opened with an upward slash, using a small, sharp stick. The tip of the latter then is inserted beneath *a* of figure 13; with great care, the pollen is removed on the point of the instrument and then is inserted beneath *b*. The pollen must enter in precisely the same position as it is removed (that is, the stick must not be turned), otherwise, it is said, fertilization is not successful.

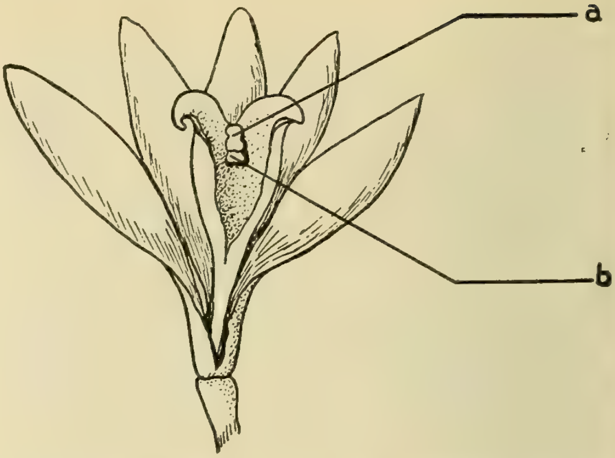

FIGURE 13.—Vanilla blossom. The labellum has been split with a delicate, chisel-pointed stick; with the same instrument, the pollen is removed from beneath *a* and is inserted beneath *b*.

If wild vanilla (*pompona*) is at hand, it sometimes is used for pollination. The flower is cut and carried to the cultivated vine, where the pollen is removed from the wild bloom and is passed to the pistil of the cultivated one. The procedure is identical, except that two flowers are involved instead of one. The resulting pods are larger and heavier, but usually are considered less desirable.

If pollination has been successful, a minute pod is visible about a week later. Vines are inspected carefully, and if necessary new blossoms are pollinated, so as to have maximum yield.

As a matter of convenience, most pollinate the blossoms which are within easy reach. High ones, although troublesome, have the advantage of being less subject to theft. For blossoms out of reach, the planter lashes a rope firmly between the trunks of two nearby trees, and steps on this improvised tightrope.

The stick for pollination is specially prepared. Some think that the wood is of little importance; others will use nothing but the heart of the *chaca* (No. 228). The sticks we have seen are 12 to 15 cm. long; but diameter may vary from 3 mm. to 2 cm. Regardless of thickness, the tip is whittled with a knife or machete until it has a delicate, chisel-shaped point.

HARVESTING

After pollination, the vanilla is left to its own devices until fall, when the pods are collected.

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[52] However, planting takes place after pollination, and sometimes a new cutting already bears four or five young pods per cluster of flowers at the time it is planted. These are not removed but are allowed to mature.

Those within reach are grasped in the hand and the stem twisted off. Those high on the vine are removed by means of a long stick, split at the tip, with a small wooden crosspiece forcing open the cleft. In this fork the base of the pod is caught and twisted free, care being taken that the pod itself is not damaged.

Theoretically, the vanilla bean should ripen on the vine until December, and early cutting produces an inferior crop. Municipal authorities in Papantla set November 15 as the date prior to which it is illegal to sell green vanilla. However, as a matter of self-defense, the Totonac are obliged to cut earlier. They say philosophically that it is "better to cut green than to have the vanilla stolen," and most cut about the middle of October.

Newly cut pods are not placed in the sun to dry until 5 or 6 days have passed; otherwise the drying is not successful. Moreover, vanilla is left only an hour or so a day in the sun; if exposed more, the color is altered and sale value lost. The chore of drying is prolonged for months and sometimes is extremely difficult because there is no sun.

Most Totonac sell their vanilla green, either to small-scale buyers or direct to the big merchants in Papantla, who attend to the drying. However, if the pod has started to turn yellow, generally it is retained, to be dried in Tajín and, later, to be sold for a better price. Although few Totonac cure their vanilla, Pedro Pérez has rigged up in his house a drying frame, which consists of two substantial poles set in the ground near the wall; above, they are tied to the frame of the building. The poles support six narrow shelves, of split bamboo, on which the beans are spread (fig. 14).

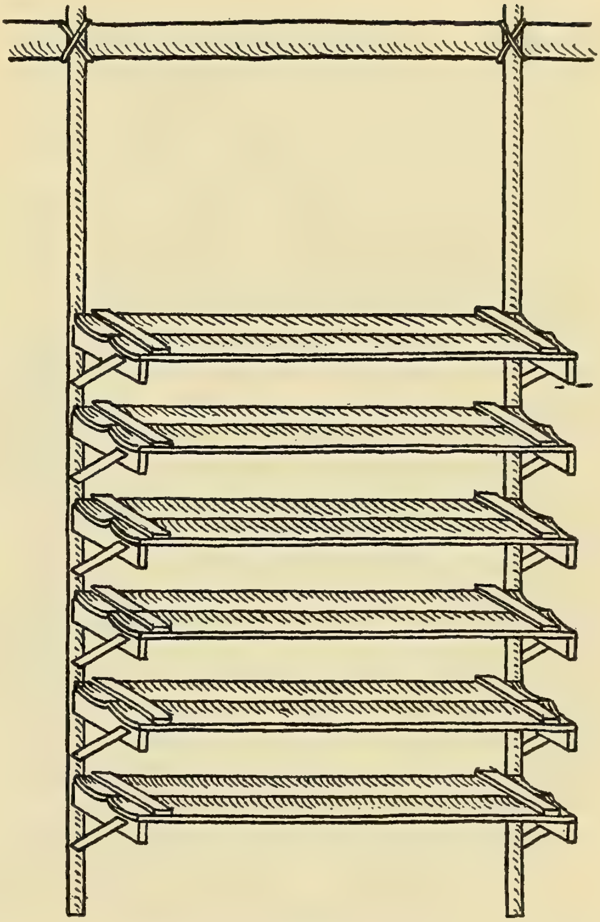

FIGURE 14.—Frame for drying vanilla. Two upright poles are set in the ground, against the interior of the house wall; above, they are tied to the frame of the building. Two lengths of split bamboo, concave side upward, form narrow shelves. They are supported by strips of wood, cut from commercial boxes, and nailed in place; on the upper surface of the shelf, another narrow strip holds the bamboos in position. Not to scale.

MARKETING; THEFT

All Tajín vanilla, green or dry, is marketed through Papantla, which clears even that grown as far distant as Tuxpan. It may pass, however, through several hands before it reaches the capitalistic vanilla merchants in Papantla. As will be seen below, a shockingly large percentage of the crop is stolen. Individuals known as *pacotilleros* (those who make small bales, or *pacas*) buy the stolen green vanilla; they generally sell to intermediaries, who then resell in Papantla. Local storekeepers also buy vanilla for resale and, in addition, a good many small-scale intermediary buyers come to Tajín in the fall and arrange in advance to buy the crop. They may leave a deposit, to demonstrate good faith, then return on a set date to collect the pods. In the fall, these small-scale buyers, and the agents of the big dealers in Papantla, infest the trails, trying to persuade passers-by to sell to them. Vanilla marketing is discussed further in Part 2, in the chapter devoted to Commerce.

Years ago vanilla was sold in lots of a hundred pods, at $10.00 to $12.00 pesos the hundred. Later it was sold by the pound (*libra*), in rolls of 3 to 5 pounds each; 100 beans are said to make 5 pounds.

Nowadays, it is sold by kilogram, and the price depends on various factors. Green vanilla invariably brings a great deal less than does the dry bean; quality also enters into the price, as does supply. Those who can afford to, wait until January to sell to better advantage.

For example, in October of 1946, the price for green vanilla ranged from $4.00 to $9.00 pesos the kilogram; in November, from $6.00 to $11.00. However, by December, the price had risen to $12.00; and by January, when the bean was partially dried, from $12.00 to $14.00 pesos. For well-dried vanilla, the Totonac receive $40.00 to $50.00 pesos. *Picadura*—oddments, such as broken beans and lone ones which have been overlooked in the same general harvest—go on the market in January, and bring about the same price.

Unfortunately, most Totonac are not able to wait until after the first of the year to sell their vanilla. They need the money—particularly because the observances associated with All Souls' Day are expensive. Moreover, a good many sell early simply because they are afraid to have the vanilla on hand, for it may be stolen and they themselves liquidated in the bargain.

A Totonac who no longer plants says flatly that he is not interested in raising vanilla: "One plants, one pollinates, and someone else harvests." One of his sons was killed some years ago while on his way to the vanilla field, and the father adds sadly that he "prefers not to have money and to keep his sons."

One might almost say that theft is endemic to the vanilla business, although most Totonac feel that it has been on the increase during the past few years. As the cutting season approaches, theoretically, one should be on guard day and night. However, many feel that discretion is the better part of valor and make no effort to watch the field, for harrowing tales are told of planters who have tried to protect their holdings and who have been murdered for their pains. Some, however, wander daily in the field; if they see evidence of intruders, they make a brave show of whistling and of chopping wood, in the hope of discouraging the robbers. At this time of year, a planter thinks twice before going to Papantla for weekly purchases because the harvest may be stolen during his absence.

Practically everyone is agreed that local persons are involved in the thefts. "Otherwise, how could they find their way through the fields so easily, and how could they know when one has gone to town?"

Even so, it is evident that the buyers in Papantla are far from scrupulous and are quite content to traffic with stolen property. With the ostensible purpose of reducing theft, municipal authorities in Papantla set November 15 as the date prior to which it is illegal to sell green vanilla. This ruling is just about as effective today as it was in the eighteenth century (Bruman, p. 370). There are, in fact, rumors of a sprightly contraband commerce in Papantla. At night, trucks are said to enter town with stolen vanilla from Tuxpan and, likewise during the night, the cargo is dispatched from Papantla by muleback. State taxes apparently encourage contraband activities. We naively hoped to obtain a rough estimate of the vanilla marketed through Papantla on the basis of the tax proceeds. But a number of disinterested citizens of that town assure us happily that there is scant agreement between taxes and production, since the big merchants find it more economical to pay bribes in lieu of taxes.

PRODUCTION

Vanilla requires more capital than does maize. The planter must have land, either owned or rented; he must have sufficient funds with which to buy cuttings; and he must be able to wait until the third year for any proceeds. Moreover, he must be willing to gamble on rather poor odds, because the crop fails frequently and because, to boot, a large proportion of the harvest invariably is stolen.

Of the 36 families for whom we have detailed information, 27 plant vanilla. Many plant on rented lands, for which the charge normally is higher than if maize were to be grown. Some owners waive the rent until the third year, when the vine begins to bear. Others charge $25.00 pesos for half a *destajo*, $35.00 to $40.00 pesos for a full one. After the first harvest, the rent may be raised to $100 pesos; after the second, to $150. In no case is the vanilla considered the property of the landowner, and if, for any reason, the planter withdraws from the field, he removes his vanilla and plants elsewhere.

The size of the local field varies from 0.125 to between 3 and 4 hectares. Often an individual has several small plots, and of the 27 families, 6 have their vanilla holdings scattered. One planter has as many as seven different fields—some on his own land, some on rented property. The normal life of a vanilla field is about 10 years, but toward the end of that time the yield diminishes; however, we know of fields 18 years of age which still are bearing.

Vanilla is of major importance economically because it is converted directly into cash. With the latter, a Totonac is able to pay for doctors and medicines and is able to buy clothing, kerosene, lard, meat, bread, coffee, salt, and many other useful items. Twenty-five years ago, when the vanilla business was really profitable, one man and his four sons planted 5 *destajos* to vanilla; with the first (?) harvest they cleared $20,000 pesos—each bought land and built a house.

Those days are long since past, but even now, in a good year, the income from vanilla is not inconsiderable. Of our 27 families, 2 have fields which are not yet producing, and another gave an incomprehensible statement concerning his sales. Accordingly, we have information concerning vanilla proceeds from 24 families The income from the 1946 crop ranges from $20.00 to $1,310 pesos per family, with an average of $361.83. This does not include stolen vanilla, which probably averages at least one-third of the total crop. Nor does it include any correction for the few individuals who manifestly gave false statements—as with maize, fearing that their taxes might be raised.

Vanilla production in Tajín probably could be placed on a more secure footing. It would be unwise to base an entire economy on it, because of the irregular rainfall and the danger of complete crop failure from time to time. In 1944 and 1945, for example, almost no vanilla was harvested, owing to drought; the 1946 crop was good, "but barely sufficient to pay what had been borrowed." However, in its present role, as a cash crop to supplement maize, vanilla growing fits admirably into the existing economy, and increased proceeds from it would mean an improved standard of living.

As we see it, increased proceeds depend largely on two factors: (1) control of theft; and (2) better marketing facilities. As matters now stand, the Totonac planter takes all the responsibility and all the risks of production, while the pilferers and the Papantla merchants reap most of the profits.

For the reduction of theft, we have no solution to offer. Obviously, legislation in itself is not effective. However, on the score of marketing, the situation is more hopeful. At present, the price of vanilla is set by the half dozen buyers in Papantla, who enjoy a monopoly. Four pesos the kilogram do not warrant the trouble of pollinating and harvesting. The natural solution of the marketing problem would be a Tajín cooperative which would be in a position to bargain collectively and which, moreover, would not be obliged to limit its sales to Papantla.[53]

The establishment of a cooperative in Tajín will not be easy. On the score of vanilla, no man trusts his neighbor, and concerted action will be difficult. Yet, if the Totonac could be persuaded of the wisdom of collective bargaining and if they could bring themselves to designate as their agents a few persons of integrity—and there are many in the community—the project should be extraordinarily beneficial. The vanilla business is profitable—for the buyer, if not for the planter.[54]

SUGARCANE

Cane is an introduced crop which the Indians seem to have adopted early and with great enthusiasm;[55] the Totonac believe that they have "always had cane."

Cane is in part a cash crop, although at least as much is raised in Tajín for home consumption as for sale, and most families have a few plants. Although fewer sell cane than vanilla, those who plant in quantity realize about as much from brown sugar as they do from vanilla, and, for the 10 households for which we have data, sales range from $20.00 to about $1,100.00 pesos annually, per family.

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[53] The Cámara Nacional de Comercio, in Mexico City, is able to provide a list of many manufacturers who buy vanilla.

[54] A local buyer on a small scale proposed that we collaborate with him. He asked for $10,000 pesos capital, assuring us that at the end of a single season he would be able to return the initial investment, plus a profit of 100 percent.

[55] Motolinía (p. 164) notes that the Indians of *tierra caliente* "son tan amigos de cañas de azúcar para las comer en caña, que han plantado muchas y se dan muy bien . . . ."

KINDS OF CANE

To all intents and purposes, there are two kinds of cane, a "white" and a "purple,"[56] with the latter subdivided into a heavy stalked form whose color is confined to the skin, and a thin, spindly type whose pith and skin are colored. The last cane is used chiefly as a remedy for whooping cough; the skin is removed and the child chews the pulp. Other canes are believed to aggravate a cough.

White cane is the more difficult to grow. It may be injured by too much water or too much sun; it is easily knocked over by the wind, and thereafter cannot be processed; and it is a favorite food of marauding animals. Moreover, if it is not cut and milled at the indicated time, the juice dries and the yield is small. On the contrary, the large purple cane is more resistant; it withstands wind; it is less favored by animals; and one may delay considerably in grinding it, without reduction in yield. Those who plant in quantity prefer this heavy dark cane, and from it is made most of the brown sugar manufactured in Tajín.

PLANTING AND CARE

Cane is believed to grow best in fields which recently have been cleared of *monte alto*. In Tajín, level land with poor drainage (*aguachal*) is preferred; and in this respect, cane fits nicely into the local pattern, because neither maize nor vanilla is suited to such terrain. However, cane also is grown successfully on slopes.

Like vanilla, cane is raised from cuttings. Either "the point" of the stalk is used, or a length of 2 *jemes* (ca. 40 cm.), so cut that three joints are included.

Planting takes place when there is ample precipitation—either during the drizzles of fall or the cloudbursts of summer. Some consider October the best month; others, December; and one recommends June. Within 20 days, the cuttings sprout, and a minimum of 8 months passes before the cane is first cut. Those who plant in October count on cutting the following May; and December planting is ready by the next August. New cane, however, may be left uncut as long as a year and a half.

Only in exceptional cases, when the individual contemplates a shift from maize to cane, is the latter planted between the rows of corn; generally it is put in a separate plot (*cañal*, katˀčinkatˀnín). Those who count their holdings by number of plants rather than by hectares or *destajos*, often have clumps of cane in the milpa or in the clearing about the house, instead of in a field apart.

The land is cleared and the earth is worked with the metal *coa* to form rows. A hole then is made with the digging stick. Sometimes it is dug on an angle, and three or four cuttings are set in the cavity, not upright, but inclined. They are covered by earth to more than half their length. Others make a more or less rectangular hole, into which two or three cuttings are laid flat, in the same axis as the hole; in this case, the cutting is completely covered by soil. Planting is in single rows, about 2 m. apart.

The plot is weeded until the cane is well grown, but otherwise requires no attention.

CUTTING

When the cane "blossoms" it is ready for cutting and ceases to grow. One waits a bit, in the belief that the yield is higher, but too long a wait means less sugar.

Most seem to feel that maximum yield is derived from cane cut in April or May. Many harvest part of the field then, leaving the remainder until November. At that time, brown sugar is marketed so that money may be available for the expenses connected with All Souls' Day. Moreover, on this occasion, it is considered socially correct to bestow gifts of cane sirup (cooked, but not solidified) on relatives and *compadres*, so that they may eat it with the *bollitos de anis* (p. 153) which are prepared for that festival. Many harvest the cane little by little, as the household needs either sugar or cash, or both. Cutting in June and August is considered least productive.

"Cutting is more work than planting." With a machete, the cane is hacked off low to the ground; a diagonal cut is considered imperative. Most families are able to cut without outside assistance, and sometimes women help. If a brother should lend a hand, he either is paid in cash or is given a share of the sugar.

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[56] Most informants recognize two kinds of cane, a "white" (čánkat) and a purple (sitsáka čánkat; dark or black cane). Several speak of a white cane striped with green (akáčok čánkat; shrimp cane; because of its markings) but others say that this is the same as the white. One informant speaks of a yellow cane, not recognized by anyone else; and another describes a "greenish" variety (łstéknik čánkat), which "never becomes hard."

The cut cane sprouts anew, and replanting is not necessary for 2 or 3 years.

PROCESSING

Both men and women haul cane to the mill (*trapiche*). Men use a head tump; a few women follow suit, but most carry a bundle of stalks on the head. If the family has a donkey or is able to rent one, the pack saddle is fitted with a pair of forked sticks which hang low on each side. Into the crotch of these the cane is stacked, and a small boy escorts the cargo to the mill. About a hundred stalks,[57] each a yard (*vara*) long, comprise a load (*carga*).

If a planter has a hectare of cane, it is advantageous for him to own a mill. An incomplete count indicates that at least 29 families in Tajín are so equipped; 11 mills are of wood, 20 of iron; two families have both kinds.

The iron mill (pl. 8, *b*) is a commercial product, usually, if not always, manufactured in the United States and sold in Papantla for $1,200 to $1,300 pesos. The mill proper consists of a series of upright cylinders between which the cane is crushed. The large central one is known as the nursemaid (*nana*), the smaller ones, as the children (*hijos*). This contraption is mounted in the open air, on a frame of four substantial uprights set in the ground and connected by crosspieces. On top, a long pole is attached to the large central cylinder. It is arched slightly downward, and to one end of it a horse or mule is hitched. The animal walks or is driven in a circle about the mill, thus providing traction which turns the central cylinder; and this, in turn, revolves the smaller ones. Formerly, it is said, a pair of yoked oxen turned the sugar mill, and Basilio Hernández still has an aged wooden yoke, used in his father's day for hooking oxen to the mill.

Generally, cane which is hauled to the crusher is laid across two parallel sticks, so that it does not rest directly on the ground. From this stack, stalks are removed as needed. A substantial post, which serves as a chopping block, is set vertically in the ground adjacent to the mill, sufficiently low so that the pole to which the animal is hitched will clear it. A cane is laid across the top of the block and the joints cracked with a sharp blow from a heavy wooden mallet (litʌlan). The latter is similar in form to our old-fashioned wooden potato mashers (fig. 15, *c*) and is of *zapote*, *moral*, or *pimienta* wood (No. 191, 324, 30). If the cane is not thus broken, the animal turning the mill soon tires.

One man manipulates the metal mill. He cracks the cane and feeds it into the mouth of the crusher and the dry stalks are ejected on the far side. If the canes are thin, two or three may be inserted at the same time. The juice drops into a receptacle on the ground beneath. Formerly, this was an oval, wooden, dugout tub, with a lug at either end. Today, a 5-gallon tin most often is used. If the receptacle is a clay pot, its rounded base rests in a ring made of dry, crushed cane, wrapped with liana.

The wooden mill (pl. 8, *c*, *d*) works on the same principle, but the crushers are of wood instead of iron. There are three upright cogged cylinders each cut to receive the teeth of the adjacent one. The central cylinder has an upward extension, through which is passed the pole to which the animal is hitched. As the central cylinder revolves, the two flanking ones follow suit. The supporting frame of the wooden mill has two uprights instead of four.

Although its sugar has a better flavor, the wooden mill is less effective. Two individuals work it, one on each side. One feeds the cane into the machine, between the central and right-hand cylinder; it emerges on the far side, where the other operator returns it to the mill, between the central cylinder and the one on his right. This time, the stalk is twisted sharply to assist in extracting the juice. On the contrary, the iron mill requires only one operator, and the cane is crushed in a single passage through the machine.

In Tajín wooden *trapiches* are made by Pedro Pérez, Francisco Villanueva Mata, and perhaps one or two others. They charge $100 pesos for labor alone, the owner providing the wood. The cogged cylinders are of *zapote*, *ébano*, or *moral* (Nos. 191, 152, 324). A man from nearby Plan de Hidalgo comes occasionally to Tajín to drum up trade; he undersells, and at least one family has bought a mill from him at $75 pesos.

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[57] According to the thickness of the stalk, 45 or 50 canes—the later usualy expressed as 25 pairs—form a *tercio;* and 2 *tercios* make a load.

The frame on which the mill stands is not included in the above price. The supports are of any hard wood, such as *chijol*, *zapote*, or *moral* (Nos. 176, 191, 324), and any Totonac handy with tools is able to mount a mill in about 3 days.

When sufficient cane has been crushed to fill the receptacle with juice, the latter is emptied into a large copper vessel, to be boiled. This is an almost hemispherical cauldron, with two large loop handles at the rim, opposite each other. There are various sizes of copper vats, and the juice from four donkey loads of cane is considered sufficient to fill one whose capacity is ten 5-gallon tins.

Nowadays, a 50-gallon copper cauldron costs about $300 pesos. The best containers are said to be from Santa Clara—presumably Santa Clara del Cobre, in Michoacán. Formerly, they were sold by an itinerant merchant, one Enrique Ortigosa, of Cuetzalán, Puebla. Evidently local business prospered, for he and a son have established themselves in Papantla, where they make copper kettles, said to be inferior to those of Santa Clara.

Before the copper vat is filled with juice, a fire is started in a specially prepared "oven" (pl. 8, *e*, *f*) adjacent to the mill. Generally this is located on a slight rise. A circular subterranean firebox is excavated, with an opening in the side of the slope, through which fuel is fed. The floor slopes slightly toward the opening, so that the ashes may be raked out with greater ease. Over the fire chamber is built a low, partial dome of masonry, open at the top in such a manner that the cauldron fits into the aperture (pl. 8, *f*). On the ground, at the base of the dome, is left a small opening at each side which provides draught for the fire. The dome is built of smooth stone slabs, set like a false arch, in mortar of mud or of lime and sand. For the lower courses, some use equal parts of lime and sand, but near the summit, add more lime, so that the structure will not fall with the weight of the cauldron. Often, a simple roof of palm, supported by forked posts, protects the "oven" from sun and rain.

As fuel, *laurel*, *zapote*, *pimienta*, and *huesillo* (Nos. 130, 191, 30, 330) are preferred. If the "oven" is cold, two donkey loads of wood per cauldron of juice are required. However, only half that amount is necessary, if the oven already is hot and the problem is to retain the heat. It is said that one *tarea* of wood is sufficient for five cauldrons of cane juice.

The copper cauldron with the sirup is placed over the fire to boil. In October and November, after continuous rains, the sirup is watery and the flavor insipid. To correct this, a few handfuls of sifted wood ash are added. They are placed in a calabash shell and a small amount of the hot sirup poured over them. "The force of the ash rises," and the liquid is returned to the cauldron; the sediment is thrown away. In precisely the same manner, regardless of season, a small quantity of lime usually is added, so that the sugar may be light-colored.

"In May there is much sun," and ash is not required, except for cane which has been grown in low, level fields with poor drainage. In fact, usually the cane juice is so concentrated in the spring that it is advisable to dilute it with water. For example, if the cauldron is of 12 tins (60 gallons), half a tin (2.5 gallons) of water may be added.

The hot sirup is skimmed frequently with a leaf of sugarcane. As it begins to boil, a special colander (*pichancha*, liakaqlúkniʔ) is used for skimming. It is a simple copper plate or bowl or a shallow gourd, with many perforations, which is tied to the fork of a long, straight pole (fig. 15, *g*, *h*,). Since *laurel* (No. 130) weighs little, it is preferred. The scum removed from the surface is known as *cachaza;* ordinarily, it is thrown on the ground, but should anyone eat it, he becomes excessively sleepy and "cannot be aroused for hours."

As it boils, the sirup rises, and usually some is removed from the cauldron to prevent spilling. When the liquid is relatively free of impurities, a copper cone (*copa*), open top and bottom, may be placed over the boiling sirup. The base fits into the cauldron, and as the liquid boils, it comes through the peak of the cone and runs down the exterior, back into the cauldron. Those who do not have a cone, dip the sirup constantly with the handled colander, to keep it from boiling over.

In the course of several hours, the liquid thickens,[58] and when it is about the consistency of maize gruel, the cooking is terminated. At this point, some sprinkle a pinch of bicarbonate of soda over the surface of the sirup, but we are not certain whether this is to improve the color or the texture. A long pole is passed through the large loop handle at each side of the rim, and two men lift the cauldron from the fire. For about half an hour thereafter, as the sirup cools, it is stirred with a slender stick (fig. 15, *i*) of hard wood, such as *laurel*. When the liquid which drops from the rod forms a more or less solid mass, the next step is to pour the sirup into the mold (fig. 15, *d-f*).

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[58] Sometimes, owing to the evil eye, the sirup may "refuse to thicken," in which case a few leaves of *aguacate oloroso* (No. 248) are tossed into the vessel.

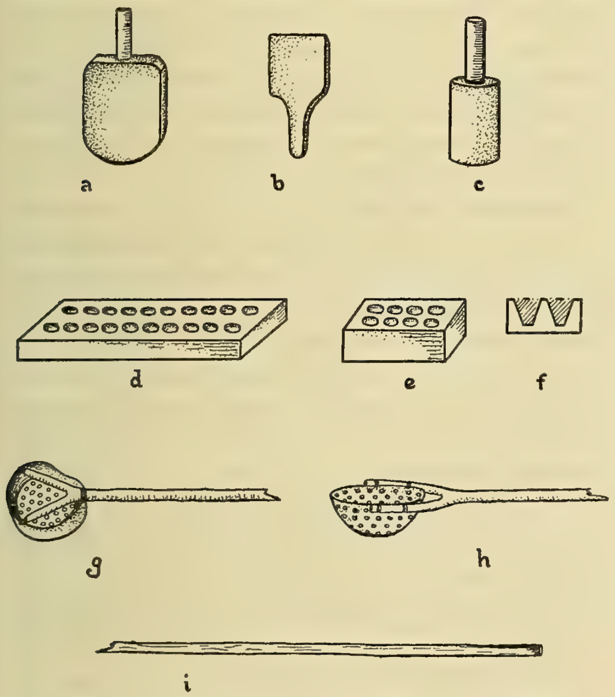

FIGURE 15.—Sugar-making equipment. Specimens do not appear in the sequence in which they are used. *a, b,* Wooden paddles used to scrape sugar which adheres to walls and floor of the cauldron in which the cane juice is boiled. *c,* Wooden mallet, with which joints of cane are cracked before it is fed into the mill. *d–f,* Wooden molds for brown sugar. *g, h,* Colanders, with forked stick handles, used to skim boiling cane juice; *g,* metal bowl; *h,* gourd. *i,* Pole used to stir boiled sirup as it cools. Not to scale.

The latter is a squared block or beam, sometimes of mahogany, but usually of cedar, since the latter resists cracking when subjected to heat. In this block have been made two rows of subconical cavities in which the cakes of sugar are to be formed. Generally, each man makes his own mold, but if he is busy, he may hire someone to do the work. If the carpenter supplies the wood and the labor, he charges $3.00 pesos; if he is given the wood, the price is $0.10 for each cavity. The latter may be one of two sizes. Some prefer molds so made that the resulting cake of sugar weighs a bit less than half a kilogram; others prefer a larger cavity which produces a cake of about three-quarters of a kilogram.

If one has no mold, he can borrow from a neighbor, with the understanding that the loan is "for days and not for months." Or he prepares a makeshift by cutting a large stalk of bamboo in lengths of about 15 cm. These are stood in line on a plank, and the heavy sirup poured into them. There is no Totonac name for mold.

So that the sugar will not stick, the form is moistened with cold water, and with a large spoon-shaped gourd, the sirup is dipped from the vat into the cavities. The sides of the cauldron are scraped with a wooden paddle (liswikʔen) (fig. 15, *a, b*) of *zapote* wood. Most of the sugar goes into the mold, but the small fry of the family congregate hopefully, to nibble the scrapings which are too hard to be added to the cakes.

After half an hour in the shade, the sugar is set, and the mold is inverted in a bed of dry, crushed cane. The latter, incidentally, is of no other use and generally is burned or thrown to one side to rot. A small amount of water is poured into the now empty cavities of the form, and the latter is left in the shade until the next batch of sirup is ready.

The squat, subconical cakes of brown sugar (*panela*) dry a short while before they are wrapped. Two are placed, butt to butt, in a corn husk, and the wrapping tied with cordage made of the leaf of the *palma redonda* (No. 259) (p. 220).

A parcel containing two cakes of brown sugar is known as a *mancuerna;* this is the standard unit used locally. Size and weight vary according to the mold; some *mancuernas* weigh less than a kilogram, others, about 1.5 kg. Price ranges from $0.30 to $1.00 peso a *mancuerna*, according to size, color, and quality—also, according to supply and demand. In Tajín, the price usually is between $0.40 and $0.50; in Papantla, it is slightly higher.

Production depends largely upon the season and upon the condition of the cane. For example, following a spell of hot, dry weather, a given cauldron of juice may yield only 10 *mancuernas* instead of the usual 25. By and large, it is said that one *destajo* of land planted to cane produces annually between 2,000 and 2,400 *mancuernas* of sugar.

Local sugar is of good quality—well flavored, light-colored, clean, and of uniform texture. It is infinitely superior to the general run of brown sugar marketed in Mexico City at twice the price and characterized chiefly by its brunette character and its profusion of odd bits of refuse.

BORROWED EQUIPMENT

The processing of sugarcane requires special equipment not owned by every household. The metal mill and the copper cauldron, cone, and colander are commercial products, generally purchased in Papantla. The wooden mill, on the contrary, generally is made in Tajín by a specialized craftsman. Other items of equipment—mallet, gourd colander, stirring stick, scraper, and mold—present no major technical problems, and each individual usually makes his own.

Some cane planters have no equipment whatsoever and arrange to use that of a friend or relative. Some relatives make no formal charge, but subsequently the borrower liquidates the debt by offering his services in some chore. Generally, however, payment is in sugar or cash.

The price is settled by individual agreement. Often the charge is 2 *mancuernas* (that is, 4 cakes) of sugar for each item of equipment—the mill; the animal; and the oven and cauldron—a total of 6 *mancuernas*. Some charge 3 *mancuernas* a day for the mill, plus 3 more for the use of the oven, cauldron, colander, scraper, and mold. Others exact a flat rate of 4 *mancuernas* for each cauldron of cane juice which is prepared. Payment is made with *mancuernas* of the size produced by the borrowed mold, and if one prefers to pay in cash, he substitutes $1.00 peso for each *mancuerna*, although this is about double the market value. When the animal for traction is rented separately, the owner may charge $2.00 pesos for each cauldron of cane juice which is crushed.

BEANS AND OTHER LEGUMES

PHASEOLUS AND VIGNA

In many parts of Mexico, beans are a staple food, and, in most households, at least in the western states, cooked beans are available literally any hour of the day or night. This is not the case in Tajín, where beans are on the fringes, if not within the limits, of a luxury food.

Half a dozen different kinds of beans are recognized by informants. Of these, the kidney and the limas are native to the New World, while the others generally are considered Old World. The latter include the rice bean and two variants of *Vigna;* the latter, strictly speaking, are not beans, but are closely allied.

Informants regard one kidney and both forms of *Vigna* as native. Concerning other kidney beans, opinion is divided; and of limas, some distinguish a native form and one allegedly introduced from the highlands. Also attributed to the highlands is the rice bean, which usually is considered by botanists as a native of Asia and which is cultivated "sparingly" in China and India (Bailey 3:2575).

In a number of cases, there is considerable confusion in both Totonac and Spanish terminology. Totonac names generally are descriptive, and a term given by the informant may depend on what special quality of the bean he happens to have in mind. Furthermore, a vine which does not dry after the first crop, but which continues bearing, is known by a generic term, aklatamañástapu. It so happens that this characterizes several of the beans, although we did not realize for some time why evidently distinct beans were given the same Totonac name. In the 1948 season, Roberto Williams was assigned the chore of disentangling the situation, and, largely through his systematic interrogation of several informants, many of the difficulties were resolved.

For most of the beans grown locally, we have both pressed specimens and seed samples; the former were submitted to Dr. H. E. Moore, Jr., and the latter to Dr. Hugh C. Cutler. In the discussion below, it may be understood that their determinations agree, except when specifically noted otherwise.

The lima bean is of particular interest. It is by no means common in Mexico as a whole.[59] Informants distinguish two kinds of limas, one native, and the other intrusive from the highlands. Neither is prized, and the flavor is described as "half bitter." Lima beans are grown on very small scale, and a family seldom has more than four or five plants in the maize field. Concerning our limas, Dr. Cutler writes that of the three phases defined by Mackie, the Tajín specimens "are closest to the Hopi branch."

No bean is grown locally in quantity or with marked success. Of 38 families for whom we have data, only 6 attempt to plant beans—although, probably the 32 who deny planting, overlook the four or five vines of limas found in most milpas. However, of the six who plant, none harvests in sufficient quantity to sell.

Opinions vary concerning the difficulties. One informant says, "If it rains the beans grow; if not, they dry. For my part, I do not like to plant them." Another believes beans do not yield "because of the sun"; another, because of "too much water." One farmer states, "I always plant beans but they do not grow." The consensus of opinion is that beans do not yield well, if at all, in Tajín. The *Vigna*, often considered particularly satisfactory for hot lowlands, is planted locally with indifferent success. However, if a variety of bean or cowpea could be found which would thrive in Tajín, it should effect major improvement in the diet, which is low in protein.

Planting apparently takes place during any season—hence, presumably, the complaints concerning both drought and excessive humidity. As usual, certain days of the religious calendar are more favored than others (see below). All beans are said to yield in 3 months. One kidney (*frijol criollo*) alone produces a single crop, following which the bush dies. Other beans may be described as semiperennial—that is, they continue to bear for a couple of years after the first harvest. Although the plant dries, it sprouts anew.

Two forms—the *frijol criollo* and the *frijol amarillo* (see *a* and *d*, below)—are bush beans; another (*frijol majayán; b*, below) is a climber if planted in summer, a bush bean if planted in winter.

Slopes with good drainage are preferred and flat fields with standing water are avoided. Beans are planted in the maize field, but not necessarily among the corn. One kind of kidney bean (*a*, below), for example, is given a plot (*frijolar*, kasˀtápun) by itself in the milpa. This generally is true of *frijol majayán* as well. But if the latter is planted in summer, the seed is dropped into the same hole as the kernels of maize. Or, if not planted concurrently, it may be placed between the rows of corn. The *frijol de cuerno* (*Vigna*) also is planted between the rows of maize, but the lima often is grown in the same row with the corn.

The best of the crop is set aside for seed. If one is planting for the first time, the seed may be purchased, for the belief that bought seed will not produce applies exclusively to maize. In planting, a hole is made with the digging stick, but by no means as deep as for maize. Beans are planted at a depth of about 5 cm., and, curiously, are not covered with earth. "Birds do not eat the seed; the danger from birds and rabbits is later, when the plant is young."

From time to time, beans are weeded, but otherwise receive little attention. To frighten animal pests, a tin can with a small stone inside may be hung in the field; it moves with the breeze and the stone rattles.

In harvesting, there are two techniques. The entire plant of the *frijol criollo*, which is a one crop bean, is thrashed (see below). However, other kinds of beans continue to bear, hence the pods are harvested individually, being collected in a pottery vessel, a gourd container, or any other receptacle at hand.

Young green beans are not eaten entire. Invariably they are shelled, and the discarded pods usually are boiled and fed to the pigs. It is curious that the Totonac have no notion of eating a string bean, although the latter is to be seen in the vegetable stalls in the Papantla market, for sale to town dwellers.

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[59] Redfield (p. 39) regards the lima bean as of European introduction at Tepoztlán. Apparently it is not grown locally, but is brought from Mexico City (p. 90). This in itself is odd, since there, the lima generally is found retail only in fancy groceries, where it is considerably more expensive than other beans. This, plus the fact that the toasted seed is eaten in Tepoztlán (p. 86) makes one suspect that Redfield's statements apply to the Old World horsebean (*Vicia faba*) rather than to the lima.

Below is a description of the different kinds of beans grown locally, based more on informants' statements than on our observations:

a. Frijol criollo (native bean)); *frijol de Castilla* (bean of Castille).

ka·nástapu (kana, *verdadero;* stapu, *frijol;* true bean). Called aklatamañástapu by one informant, evidently in error; this term applies to beans which continue bearing after the first harvest, a trait not characteristic of the bean in question.

Cutler: *Phaseolus vulgaris* L.;[60] Moore: *Phaseolus* sp. (No. 233).

Bush bean, ca. 30 cm. tall; small black (some brown?) seeds; pod ca. 15 cm. long; borne in pairs. Planted in maize field, but in a section separate from corn. Hole punched with digging stick; 3 to 4 seeds dropped in. Ca. 40 cm. left on all sides; planted in rows.

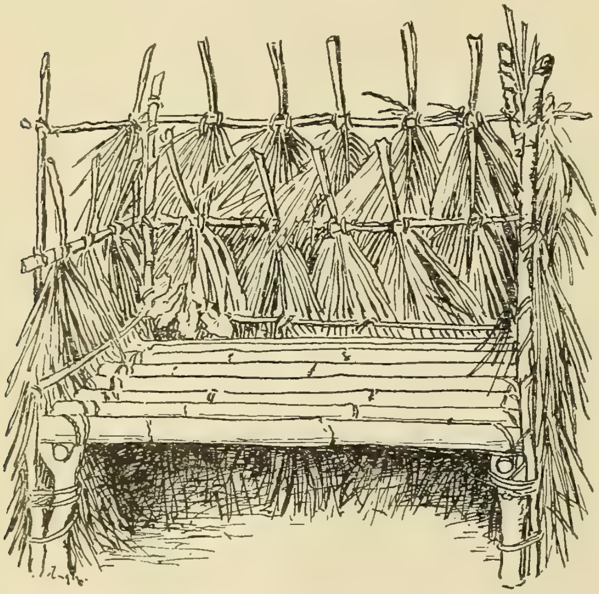

FIGURE 16.—Frame for threshing beans; used only for *frijol criollo.* See text (p. 134) for description and use. Drawn from a photograph and field sketch; not to scale.

Grows best on slopes with good drainage. Planted 3 or 4 times a year: Candlemas (February 2); Holy Cross Day (May 3); Day of our Lady of Carmen (July 16); St. Michael's Day (September 29); or in December. Most recommend February, May, December.

Matures in 3 months; plant dries after bearing. Dry plant pulled and generally taken to house for thrashing. In sunny weather, placed in the yard, on woven mat. Plants heaped on mat and exposed to sun; with heat, pods open. Covered with another woven mat or an old canvas and beaten with a light stick. Refuse removed and harvested beans repose beneath, on lower mat.

Another arrangement for thrashing shown in figure 16. A frame, thatched with palm on 3 sides, has floor of split bamboo. Plants heaped on the floor and beaten with a stick. Beans fall between interstices of bamboo, on woven mat placed beneath. The Maya of Yucatán apparently use a similar device for shelling corn (Steggerda, pl. 20, *e*).

If it is raining, beans shelled by hand, over woven mat on house floor. Plant held in left hand, root upward; butt of pod grasped between thumb and finger of left hand (fig. 17). Seeds stripped from pod with thumb and finger of right hand, using rapid downward motion. This technique for pods of fair size; if small, the plant merely shaken over the mat.

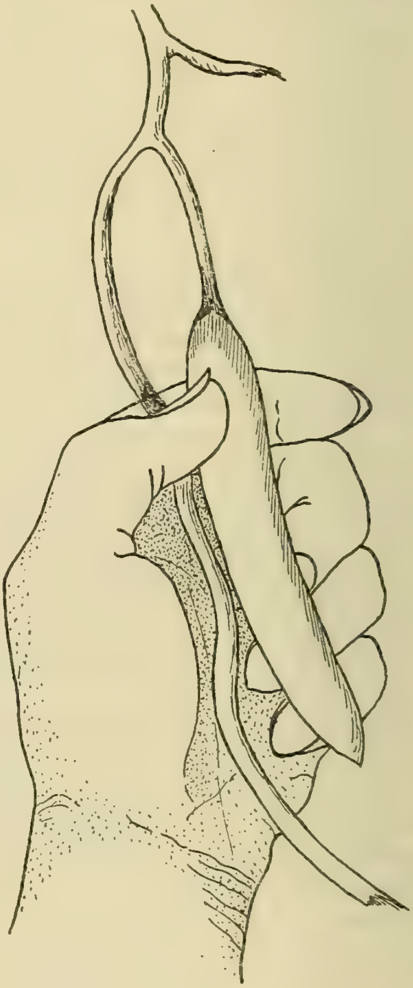

FIGURE 17.—Shelling beans. See text (p. 134) for description.

Considered the best flavored of all beans.

Most plant only for home consumption; others sell in small quantity, usually locally, by liters. Said to bring better price in Papantla than other beans. *Frijol criollo* sold at $1.50 a kilogram, others ca. $1.00.

Regarded as native.

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[60] Two seed lots originally were identified by Dr. Cutler (undated letter of December 1947) as the tepary bean, *Phaseolus acutifolius* Gray, var. *latifolius* Freeman. Later (letter of August 2, 1949), he writes that "there is nothing tepary-like about your beans I determined as such earlier, and the dull color was mainly dust."

b. Frijol majayán. Called by some *frijol criollo* (native bean) or *frijol de Castilla,* but not to be confused with the preceding, which also bears these two alternative names.

Known to some informants only as *majayán.* Others say the Totonac name is lukústapu (lúkus, *hueso;* stapu; *frijol;* bone bean, because of its hardness). By still others, this Totonac term is applied to *frijol de cuerno* (see *e,* below).

Cutler: *Phaseolus vulgaris* L.; Moore: *Phaseolus* sp. (No. 238).

A bush bean, if planted in winter; a climber, if planted in summer. Seed described as similar to the preceding, but "more brilliant, as though greased." Pods ca. 10 cm. long, borne in pairs.

In summer only, may be planted with maize. Seed carried in a separate fiber bag, but dropped into the same hole with the corn. Various planting dates recommended: Holy Cross Day (May 3); Corpus Christi; Day of Our Lady of Carmen (July 16); St. Michael's Day (September 29); Christmas; Kings' Day (January 6).

If not planted concurrently with maize, may be added later to the field, between the rows of corn. However, generally grown in a separate plot within the milpa. Planted in rows, leaving a *cuarta* (span) on all sides. Three grains per hole.

Ripens in 3 months; apparently continues bearing after first harvest.

Sold locally and to dealers in Papantla market. Occasionally as much as 4 to 6 *fanegas* (576 to 864 liters) sold, at $144 pesos a *fanega.*

By some, considered native; by others, intrusive from the highlands, but no concrete data obtainable. One informant mentions a *majayán arribeño* (highland *majayán*), whose seed is red and white. Allegedly introduced by an individual named Vélez, originally from Hidalgo, who died in Tajín, while working for Onofre Xochigua. We were unable to find anyone who still plants this bean.

c. Frijol ancho (wide bean).

šiuyúmin, šiuˀumín, šuyumín; no translation available.

Phaseolus lunatus L. (both local and highland forms); lima bean.

Climber, or prostrate on ground.

Two kinds recognized by informants; one considered native; the other, intrusive from the highlands. The former with a wide, flat, "dark" seed; the latter, wide, flat, white to cream. Borne in short (4 cm. pods), several in a cluster.

Native form usually planted in May or August; ripens 3 months later; highland form planted in August for November harvesting. Some do not distinguish the two kinds and recommend planting in May, July (Day of Our Lady of Carmen, July 16), August, or September. Three seeds dropped into a hole made with the digging stick; planted in the maize field, usually in the same row with the corn. Climbs the stalks of the latter, or odd tree trunks standing in the field.

In a wet year, the vine said to bear continuously; after a drought, it dries. Ordinarily, the plant lasts a couple of years and reappears later as a volunteer.

Little esteemed by informants; said to be "half bitter and not of good flavor," although the local form considered tastier than is the highland intrusive.

Grown on very small scale; usually not more than four or five plants in a milpa. May be sold by the liter or *cuartillo* (3 liters); maximum quantity sold, 1 to 3 *almudes* (12 to 36 liters). Marketed in Tajín and in Papantla, generally to individual households; occasionally stores in Papantla buy (by kilogram).

d. Frijol amarillo (yellow bean).

paluwa siqˀ; paluwa, *tripa;* siqˀ, *ratón;* mouse entrails. Known to one informant as *lenteja,* lentil.

Phaseolus calcaratus, Roxb.; rice bean.

A bush bean. Small "dark" (*sic*), yellowish seed; pod ca. 10 cm. long, borne in pairs.

Planted in August, in a maize field already well-grown; harvested in November; continues to bear until choked by weeds.

Grown chiefly for home consumption. Seldom eaten green; "the seeds are so small it is difficult to remove them from the pods when green." Considered most palatable fried. Seldom sold and then only in small quantity.

Said to have come from the highlands, about 15 years ago.

e. Frijol de cuerno (horn bean); *frijol largo* (long bean).

aktokóstapu (said to mean *norte de frijol* [*sic*], aktakóstapo, akalakóstapu (so-called "because it is dark"); lʌkɔ́tstapu, lukústapu (lúkus, *hueso;* stapu, *frijol;* bone bean, referring to hardness). One informant says latter name applies to "half white" seeds, other groups of terms to black ones.

Cutler: *Vigna unguiculata* (L.) Walp.; Moore: probably *Vigna sinensis* (L.) Savi (No. 297); in any case, the two terms synonyms.

Seeds small, variously described as spotted (*pintitos*), cream, white, black. Long pod (20–25 cm.) borne in pairs.

A climber. Planted in May, June, August, between rows of corn. Generally extends along ground but climbs if support at hand.

Harvested at the end of 3 months and continues bearing 2 to 3 years. Moreover, after first planting, new vines appear as volunteers. One informant reports one harvest annually; another, continuous bearing.

Better flavor green than dry. Raised principally for home consumption; rarely sold.

Considered native.

f. Frijol tripa de tuza (prairie dog entrails).

išpaluwa sa·ka; paluwa, *tripa;* sa·ka, *tuza;* prairie dog entrails.

Cutler: *Vigna unguiculata* (L.) Walp.; Moore: *Vigna* sp. (No. 312).

Climber. Small black seeds in long (30 cm.) slender pod; latter borne singly, not in clusters.

Planted "any time of year," but especially in May (Holy Cross Day, May 3), August, September. Requires 3 months to mature. Unless in field with poor drainage, the plant dries after bearing, but sprouts anew. Stem of vine sometimes attains the "thickness of a finger." Ceases bearing during cold weather; generally produces two to three times a year.

No data concerning quantity grown, but our impression is that planting is on very small scale.

Considered native.

OTHER CULTIVATED LEGUMES

In addition to beans and their close relatives, a number of other Leguminosae are cultivated, and it will be convenient to mention them here.

g. Pisum sativum L. (No. 254), green pea. Planted in the milpa, between the rows of maize, on St. Michael's Day (September 29), or the day before Christmas. Not treated as a climber, but extends along the ground; weeded from time to time. Eaten both green and dry; not important in Tajín diet. Women sell young peas on a small scale, both locally and in Papantla. Considered native.

h. Cajanus cajan (L.) Millsp. (No. 95),[61] pigeon pea. Planted because "otherwise it does not grow." Shrub, which may attain 3 m. in height. Seeds eaten as though they were beans. Not grown in quantity; usually planted in house clearing. Presumably of African origin (Bailey 1:613), but apparently not of recent introduction in Tajín.

i. Crotalaria longirostrata Hook. & Arn. (*chipila*, No. 91). Cultivated from seed for its leaves and flowers, which are eaten as greens.

j. Jícama, whose raw tuberous root is popular in many parts of Mexico, presumably is a species of *Pachyrhizus;* we collected no specimen. Seed planted in maize field; 3 or 4 dropped into hole punched with the dibble, the Day of St. James (July 25). Not of great importance. One man plants in sufficient quantity to sell, but he happens to be a highland Totonac resident in Tajín. Of 39 households, only one claims to plant *jícama*, and it boasts a single vine. Nevertheless, the raw root often included in food offering prepared for the dead on All Souls' Day. In view of modest local production, probably most Totonac purchase for the occasion in Papantla.

In addition, several trees and shrubs of the bean family are cultivated: three for food, one for medicine, and one as a hedge or fence.

k. Erythrina americana **Mill.** (*pichoco*, No. 284). Grown from cuttings, in house clearing; planted in February or March, when the tree is in flower. Buds and blossoms eaten (p. 162). A related wild form (No. 121) not utilized.

l. Inga paterno Harms (*chalahuite*, No. 195). Tree planted from seed, in maize field or house clearing, in June or July, during heavy rains. Fruit edible (p. 163), as is that of a wild form (No. 181).

m. Leucaena glauca (L.) Benth. (*lelekes*, No. 196*a*). Tree planted from seed; found in house clearings and maize fields. Fruit edible, as is that of wild form (No. 38).

n. Caesalpinia pulcherrima (L.) Sw. (*flor de mechuda*, Nos. 55, 115). Planted in patio or milpa, usually the former. No wild form found locally. Flowers and leaves considered medicinal; showy red and yellow blossoms used to adorn family shrine.

o. Gliricidia sepium (Jacq.) Walp. (*muite*, No. 123). Grown from cuttings; planted along edges of fields, as a sparse hedge or fence. Said to have been introduced ca. 15 years ago; provenience unknown.

CUCURBITS

A number of cucurbits are grown locally, usually between the rows of maize. A hole is punched with the digging stick, several seeds are dropped in and the earth is brushed over them with the tip of the dibble.

Two principal kinds of squashes and/or pumpkins are recognized by informants, the *calabaza* and the *pipián*. Of the former, only the flesh is eaten; of the latter, only the seed is used, generally toasted and ground, and added to sauces. At least one kind of *calabaza*, probably that described below, under *b*, produces twice a year. Seed often is stored, wrapped in a cornhusk. Before planting, that of *calabaza* is not artificially germinated, but *pipián* seed is soaked in water, then wrapped in a leaf (No. 188) and left for 4 to 5 days until it sprouts.

Dr. Cutler indentifies the *calabaza* as *Cucurbita moschata* Poiret, and adds that from "the seeds alone, it seems to be related to the tan and cream-color 'ayote' of Central Guatemala." Informants recognize four different kinds of *calabaza:*

a. One, called nípšiʔ, may be pear- or apple-shaped. The fruits are ochre-colored, with smooth skin and shallow ribs. Both forms are said to be produced on the same vine.

b. A second *calabaza*, known by the same Totonac name, probably is to be identified with the *calabaza de bola* (No. 278). It is flattened globular in shape, and the color is about the same as that of the preceding, although the skin is rough and pebbly; the ribbing also is deeper.

c. Calabaza larga (long squash) (akstúntuyu nípšiʔ; akstúntu, gourd) is another form, of which we were unable to obtain a specimen.

d. A soft-shelled type, known as li·šútʔ, is said to be indistinguishable in appearance from the first described form. "Unless someone remembers what kind of seed he planted, he does not recognize the li-šũt? until it is cooked."

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[61] A sample of pod and seed sent Dr. Cutler was identified as soybean. Moreover, Dr. Cutler noted that there "are several loose seeds in this packet. One is *Phaseolus vulgaris* and three are probably small seeds of either *Dolichos lablab* L. or an extremely small form of *Vicia faba*." When the soybean determination was questioned, Dr. Cutler felt that "flower color and plant height" probably were determining factors; both the latter clearly indicate *Cajanus*.

Pipián has a larger seed than the *calabaza*, and it is rimmed with gray. It has been identified by Dr. Cutler as *Cucurbita argyrosperma* Hort., a new species, closely related to *C. moschata*.

Gourds are planted in the maize field the Day of St. Bartholomew (August 24). Three forms are common: globular (*jícara*, kaši); elongated, necked (*guaje*, or *de pescuezo*, akstúntu), and banjo-shaped (*cuchara*, spoon; no Totonac name). All have been identified by Dr. Cutler as *Lagenaria siceraria* (Molina) Standley.[62] Gourds are not eaten, but the dry fruits are used as household receptables—bowls, plates, water bottles, dippers, and so on.

Other cucurbits are of slight importance. The *chayote*—both smooth-skinned and whiskered—is grown by a few families, but the fruit is not tasty. A sweet melon (*Cucumis melo* L. var. *chito* Naud., No. 361), is planted in December or January and is harvested in summer. It is eaten raw, but seems to be little grown. Watermelons (*sandías*) of three kinds are described: one with red flesh and reddish seeds; another, red with black seeds; and still another, "white," with black seeds. The latter form is said to be "half bitter," but edible. As usual, it is grown in the maize field, allowing about 5 m. between plants "because they spread." One informant plants the Day of St. Anthony (January 17); another, some time between February and May, for August harvest. Watermelon is not grown for sale, and production is slight.

Another member of the same family—which, from description, Dr. Cutler believes to be "*Sicana odorifera*, probably a native of Brazil"—is sold in the markets of Jalapa and Huauchinango as *calabaza de melón*. It has not penetrated Tajín very thoroughly, but one family planted it in considerable quantity a few years ago; another tried the plant for the first time this year. In time, it may become more general.

The *Momordica charantia* L. (No. 197) receives the touching Spanish name of *amor* (love). Occasionally someone plants and later sucks the seed of the ripe fruit, but this custom is very limited.

STARCHY ROOTS AND TUBERS

The Totonac are well supplied with starchy foods produced beneath the ground. Of these, the sweetpotato and manioc are of most importance, the yam less so. In addition, local cultivates include an arum and the Bermuda arrowroot.

MANIOC

Sweet manioc (*yuca*) is planted in late fall, into February. The Day of St. Lucas (October 18) and Kings' Day (January 6) are mentioned particularly.

The bitter form is unknown, but two kinds of sweet manioc are recognized—both edible and both bearing the same native name. One (*Manihot esculenta*, No. 240) is narrow-leaved, with the root white-fleshed; the other has a wider leaf and yellow flesh. The former is considered the more tasty and sometimes is sold in Papantla, reputedly to be used in the manufacture of starch.

It is claimed that animals—such as pigs and turkeys—eat the raw root with fatal results: "they eat it 1 day and 2 days later they are dead." The flesh of such animals is considered inedible. However, if the root is cooked, animals may eat it without ill effect.

When the leaf is shed—generally "about All Souls' Day"—the manioc is ready to be harvested. The stems are hacked off with a machete, and with the digging stick the soil is loosened about the roots and the latter removed from the ground. The stems are cut in short lengths and used as cuttings. Either men or women plant. A hole is made with the digging stick, the cutting is laid flat within it, and is covered completely with soil.

Most families have a few plants of manioc. They may be in the house clearing but more often are in the maize field. If the plants are few, they may be scattered; but it is said that an effort is made to plant in rows if there are as many as 20 cuttings. We have seen no field with more than a sprinkling of plants. It is necessary to place manioc toward the center of the milpa, for "it will not grow along the edges." At the end of a year, it is ready for harvesting and the cycle starts anew. If left unduly long in the ground, the root becomes so woody that it cannot be eaten.

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[62] Concerning the *jícara*, Dr. Cutler writes that this "is the most interesting of the gourd material . . . for the seeds are very similar to a few that Dr. Carl Sauer showed me from Pueblo sites in Arizona and which I have seen in another collection of about 800 A. D. from Arizona, but nowhere else. The more corky ridges or shoulders are typical of African and Asiatic gourds but are not pronounced in pre-Colombian gourds of America."

SWEETPOTATO

Three kinds of sweetpotato (*camote*, *Ipomaea batatas* (L.) Lam., No. 260) are distinguished on the basis of color: white, whose tuberous root has white skin and white flesh; yellow, with yellow skin and flesh; and "purple." Of the latter, there are two kinds, one with reddish skin and flesh, and another with reddish skin and white flesh.

The sweetpotato is planted in the maize field, between December and February. Either the root or cuttings may be used; "it is the same." A single plant has an extraordinary extension and, as one lad remarks, "one plant covers all the milpa." Usually, one is sufficient for the needs of a household, and we know no family with more than four plants.

Of 37 families, 16 do not plant sweetpotato; 6 grow only for their own use; 5 still are not harvesting; and the rest generally have a small surplus for sale. The yield from a single plant cannot be calculated accurately, for harvesting takes place little by little, starting with All Souls' Day, early in November, and continuing through February, as needs arise. One informant thinks he obtained about 2 *almudes* (24 liters) from his two plants; another, 3 *almudes* (36 liters) from a single plant. The sweetpotatoes are collected in large wooden trays and generally are sold by the *cuartillo* of 3 liters; the price varies from $0.50 to $0.65 pesos a *cuartillo*.

YAM

The yam (*cabeza de negro*, *Dioscorea alata* L., No. 299) is said to "grow anywhere," to be planted "any time," and to be available as food throughout the year. Either the tuberous root or one of the protuberances which form on the stem of the vine is planted, usually in the spring, adjacent to a tree on which the plant may climb. Frequently the aerial tubers fall to the ground and take root without further ado. It is they which are eaten. rather than the rhizome.

ARUM

Another starchy plant, known only by the Totonac name of pisís, has been identified as an arum (No. 4). The corms are planted in December, along the edge of the maize field. They are eaten, but the leaves are said not to be edible.

ARROWROOT

A further starch plant is Bermuda arrowroot (*perritos*, *Maranta arundinacea* L. (?), No. 227), whose edible tuber is planted in February, along the edge of the maize field.

POTATO

The common potato is not grown at Tajín. However, it is said that some years ago an enterprising soul tried planting and "a very good harvest resulted." But he no longer is a resident, and his example has not been followed.

CHILI

The Gulf coast evidently has been a source of chili since pre-Cortesian times. Anciently, Tuxpan and Papantla, together with other pueblos of the same general zone, paid 800 loads of dry chili annually as tribute to the Mexicans (Colección de Mendoza, 5:87). That there was no diminution after the Spanish Conquest is clear from a report of 1799 (D. P. E. P., p. 28), which states that Papantla and several other towns are heavy producers of chili. Five years later, chili is mentioned as a major crop at Papantla, along with maize, beans, and cane (Relaciones estadísticas de Nueva España, p. 45).

Tajín produces two kinds of chili. Of these, the more important is the small, wild, excessively hot form, which appears as a volunteer in the maize fields. Our herbarium specimen (No. 214) has been determined as *Capsicum frutescens* L.; but, on the basis of recent studies, Dr. Charles Heiser, Jr., considers this chili a variant of *C. annuum*. Sometimes, seed is tossed broadcast into the milpa to insure a heavier crop. This essentially wild product is collected in quantity and may have been the chili which was given as tribute to the Mexican overlords. Its exploitation has been described previously (p. 82).

Of cultivated chili,[63] there is only one kind, determined by Dr. Heiser, as "some form" of *Capsicum annuum* L.; when green, it is known as *chilchote;* when dry, *chilpoctli.* One informant recommends planting in November or December; another suggest Kings' Day (January 6) or Candlemas (February 2). In any case, 6 months are required for the fruit to mature. If there is room for a separate plot (*chilar*, kaˀpínin) in the cornfield, the chili is planted by itself, in rows. If not, it is inserted among the maize, wherever there is a bit of room, although in this the chili yield is less.

Some, if not all, soak the seed before planting. It is left overnight in a cup of water; in the morning it is drained and is wrapped in a leaf (Nos. 3, 188), and the small bundle hung for 4 or 5 days. By the end of that time, it should sprout. A hole for the germinated seed is punched with the dibble—not more than 5 cm. deep, "otherwise the seed will rot." Unlike bean seed, it is covered with soil.

Chili apparently is considered rather "delicate" to grow. Often the seed does not remain viable for more than a year; and once planted, it is subject to damage by crickets and *arriera* ants which "do not leave it in peace." Moreover, it is highly sensitive to "eclipse," and red rags are placed in the field as protection against this hazard. Several report having attempted unsuccessfully to grow chili, and probably not more than half a dozen raise it in sufficient quantity to sell, although a good many families have a few plants for personal use.

At least three people in Tajín grow chili on a sufficient scale to warrant having a special "oven" to dry the fruit; one which we examined belongs to José María García, and may be described as follows:

> On a low rise adjacent to his house, he apparently has leveled a small area and into it has cut vertically a trench whose opening at the surface is approximately 2 × 3 m. However, all four walls are said to converge toward the bottom, so that the profile looks like that of an inverted, truncated pyramid. A short tunnel cut horizontally into the slope of the hill connects with the floor of the trench, and, through this tunnel, fire is maintained on the floor of the main excavation.
>
> On the surface, along each end of the main trench, four saplings are laid on the ground. They support a series of split bamboos, running lengthwise, which at the same time roof the trench and form a floor over it on which the chili is spread to dry. A narrow pole is laid on top of the series of bamboos, at each end, and an inverted forked stick, driven securely into the ground, holds each end of the terminal pole in place. The whole structure is topped by a gabled palm roof, supported by a frame of forked sticks.
>
> As the heat from the fire on the floor of the trench rises, it warms the bamboo floor. Chili spread on it is said to require about 8 days to dry, following which it may be marketed in Papantla.

OTHER CONDIMENTS; MEDICINAL PLANTS

Apart from chili, several plants are cultivated chiefly for use as condiments. They are enumerated below, in order of importance; the goosefoot presumably is native, the others, Old World.

a. Coriander (*cilantro, culantro;* no native name). Planted in the milpa on All Souls' Day or on the Day of St. Andrew (November 30). Slight cavity made for the seed, which then is covered "with very little earth, so it will not rot." Once planted, it generally reseeds itself. Green or dry, coriander is almost as indispensable to Totonac cooking as is chili.

Apparently another form of coriander is known as *cilantro extranjero* (*Eryngium foetidum* L., No. 276). Said to be available, presumably green, all year; "it never ends."

b. Goosefoot (*epazote, Chenopodium ambrosioides* L., No. 75), another popular condiment; also medicinal. A few plants grown in the house clearing or in the maize field.

c. Fennel (*anís, Foeniculum vulgare* Mill, No. 88); seen frequently, in small quantity, in the milpas.

d. Mint (*hierbabuena*); cultivated as a condiment and as a medicinal plant.

In addition, several plants are grown primarily for medicinal use. *e–h* generally are found in house clearings; the others, either there, or in the maize field.

e. Bixa orellana L. (No. 78).

f. Ginger (*ajengibre, Zingiber officinale* Roscoe, No. 32).

g. Basil (*albahaca, Ocimum* sp., No. 318). When not available, a related form (*Ocimum micranthum* Willd., No. 319) is substituted.

h. Rue (*ruda, Ruta graveolens* L., No. 317).

i. Mustard (*mostaza, Brassica nigra* (L.) Koch, No. 102).

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[63] Other varieties of chili have been tried in Tajín with little success. One, known as *pico de pájaro* (bird's beak), Dr. Heiser and Dr. Paul Smith consider a form of *C. annuum.* In Tajín, "it does not grow well because the ground is hard; it does better in Espinal." Several have tried to grow *chile ancho* (broad chili). For one planter, the bush was "very, very small." Another, whose seed did not germinate, lays the blame on the traders from the highlands who, she suspects, deliberately "sell the chili already cooked."

j. A form of hibiscus (*semilla de culebra*, *Hibiscus abelmoschus* L., No. 33), used to treat snake bite and rabies, is cultivated by prudent families, so that it may be handy in case of emergency.

MISCELLANEOUS CULTIVATES

In this miscellaneous category we have placed sesame and the physic nut, both grown for their oil; cacao (no longer cultivated); coffee; tobacco; pineapple; a fruit of the milkweed family; and assorted garden vegetables not included elsewhere.

SESAME

Seasame (*ajonjolí;* no Totonac name) is not planted in a separate plot, but along the edges of the maize field. Seed may be scattered broadcast, or it may be planted in a shallow hole made with the dibble. Between 12 and 15 seeds are dropped into the cavity and the soil knocked over them with the tip of the digging stick. When planted thus, 5 or 6 paces are left between each cluster. Care is taken not to plant among the maize; "sesame grows more rapidly and chokes the corn; it kills it."

Of 38 families, 2 have no milpa and no place to plant; of the remaining 36, only 5 grow sesame. The quantity of seed planted is slight, varying from 0.5 to 3 litros. Most grow for personal consumption, but any excess—6 to 10 litros—is sold in Papantla, where the price is said to be $0.30 or $0.40 pesos a kilogram.

One disillusioned planter remarks that he tried sesame but that it dried "for want of water." Most seem to feel that it does well locally, and Pedro Pérez comments that "one could become rich, selling only sesame." He adds cheerfully that no one attempts to do so. As a matter of fact, it is not impossible that sesame might be worked into a pretty fair cash crop in Tajín—provided the danger of its cutting into maize production could be avoided.

PHYSIC NUT

Another plant grown exclusively for its oil is the physic nut (*piñón*, *Jatropha curcas* L., No. 192). It is said not to occur wild. Although not planted on large scale, most families have a few shrubs in the clearing about the house. Elsewhere this euphorbia generally is known as a purge, but in Tajín, its laxative properties are not recognized, and it is considered a food.

Planting takes place in January (for example, Kings' Day, January 6) and harvest, "about All Souls' Day." Either seed or cuttings will grow, but as usual, the Totonac prefer the latter. In 1947, a small harvest was predicted "because the wind frightened the blossoms." Both woodpeckers and squirrels are said to consume the seed with relish. Three or four, sometimes five, seeds are produced in a "ball." The outer covering is removed and the seed is dried, shelled, toasted, and ground on the milling stone. The pulp and oil are added to a variety of dishes.

CACAO

Although cacao is reported for the Papantla area about the middle of the sixteenth century (Suma, No. 449), its cultivation evidently languished during colonial times. None is grown at present in Tajín, but Lorenzo Xochigua remembers having seen some plants when he visited the Tuxpan area.

COFFEE

Coffee (*café*, *Coffea arabica* L., No. 161) is raised locally, and a number of families have small plantings for home consumption; none is sold. Ideally, coffee is planted in rows, although this seems to be theory rather than fact; about two houses, owing to volunteer growth, the shrubs have formed a veritable thicket. The entire fruit is placed in the sun to dry and, in time, the hull falls off. The thin inner skin is removed in the course of grinding the bean on the milling stone.

TOBACCO

It is said that tobacco (*tabaco*, probably *Nicotiana tabacum* L., No. 277) was grown formerly, "but it does not grow well here; it does better about Comalteco and Gutiérrez Zamora." However, tobacco once was sufficiently plentiful at Tajín to receive official recognition, and a 1785 report (Gazeta de México, p. 349) reports that effort is being made "to exterminate the plantings of tobacco."

PINEAPPLE

At least one family has a few rachitic plants of pineapple (ma·¢a¢a, ma·¢at) in the house clearing. Either the stock is poor, the terrain not suitable, or the care inadequate. In any case, this fruit is not common in Tajín, and the few plants we have seen are not flourishing.

CAHUAYOTE

Cahuayote (*Gonolobus niger* (Cav.) R. Br., No. 124) is found chiefly in the *monte*. However, because of its edible fruit, it sometimes is planted in the milpa or in the house clearing, adjacent to a tree up which it can climb.

VARIOUS VEGETABLES

In our sense of the word, vegetables are little grown in Tajín. The tomato is important, but dependence is upon a wild form. Green peas have already been mentioned, as have green beans. Tronchuda cabbage (No. 285) is grown by very few people; "not everyone likes this plant." Amaranth (Nos. 104, 105) is essentially wild, but occasionally one tosses a bit of seed into the milpa; the young leaves are eaten as greens. Two kinds of onion (*cebolla* and *cebollina*, little onion) are grown in the milpa; garlic (*ajo*) is planted nearby, to protect the onion from the *arriera* ant.

FRUIT TREES

The sixteenth-century Relación de Papantla reports native fruits "in quantity," but, of introduced fruits, only "oranges of Castille." Presumably the full repertoire of native fruits—representing a wide range of families—still is found, cultivated or semicultivated. Introduced fruits include the mango, several citrus fruits, and a wide assortment of bananas and plantains.

Fruit trees are planted either in the milpa or in the house clearing, generally the latter, for birds are less likely to attack the fruit and the trees can better be protected from the ravages of the *arriera* ant. The latter is troublesome and is combated without much success. The liquid in which the maize has been steeped with lime, preparatory to making tortillas, may be poured down the entrance to the subterranean nest. Sometimes a fire is lighted on top of the nest, and an effort is made to detain, with lighted brands, the ants which are headed for the fruit trees and other garden plants. At night, this undertaking borders on the spectacular, for the whole family turns out with lighted torches.

Eclipses also damage fruit trees. To protect them, at least one of our acquaintances inverts a bottle of dark glass at the base of the tree, on the east side, and buries the neck in the ground. As a general precautionary measure "so that the flowers will not fall," tree trunks are painted with a ring of lime (whitewash), 10 to 20 cm. wide. This takes place during Lent—on Ash Wednesday; or the first Friday in Lent; or the second Friday, "if one forgets."

Other than this, fruit trees receive a minimum of care. Grafting is little practiced and is confined to the orange, in the belief that a sweet orange grafted to the bitter is immune to attack from ants. In Tajín, only Juan Castro, originally of Papantla, knows how to graft; and it is said that any Totonac in nearby Gildardo Muñoz who wishes to have a tree grafted calls upon a resident of Papantla to perform the operation.

NATIVE FRUIT TREES

The hog plum is an ancient American cultivate, widely spread, and is mentioned by a number of sixteenth-century authors, including Díaz del Castillo (1:171), who relates that in "Cempoala" the Spaniards were offered "baskets of plums."

A wild form (*jobo*, No. 186) occurs locally in *monte alto*, and although it produces edible fruit, no effort is made to plant the tree. The Totonac distinguish three kinds of cultivated hog plum (*Spondias purpurea* L., Nos. 290–292): red, yellow and *campechano*. The latter has no native name, and although an American domesticate, may be suspected of having been introduced locally in relatively recent times. All hog plums are planted from cuttings, taken when the tree is leafless and about to flower.

The red plum bears fruit of that color; the yellow and the *campechano* both have yellow fruit, but that of the latter is said to be smaller and of distinct flavor. The red and yellow bear in June, "about the time of Corpus Christi"; the *campechano* produces later, beginning in August and continuing through All Souls' Day. Any surplus fruit is sold, on small scale, in Papantla. The leaf of the yellow plum, perhaps also of the red is considered useful in treating skin disorders.

Another aboriginal domesticate is the papaya or pawpaw, whose seed is planted at the time of the full moon, "so that the fruit will be large." The simplest technique is merely to toss a quantity of seed into the maize field, in the hope that a few plants may result. "Not everyone is able to plant *papayo;* some men and some women have good luck; for others, the fruit is very small." This may refer to the dioecious character of the papaya, of which most of the Totonac apparently are not aware. On the whole, the fruit does not do well in Tajín; often it is ill-formed and hard, and invariably of poor flavor. It is said, however, that formerly it was grown with considerable success.

We collected no specimen of cultivated papaya, but a local wild form, which crops up after *monte alto* has been felled and, subsequently in abandoned maize fields, has been identified as *Carica papaya* L. (No. 172).

A number of trees are known locally as *zapotes*, although few actually belong to the sapote family.

Of the latter, the *zapote mamey* (*Calocarpum sapota* (Jacq.) Merr., No. 350) is relatively scarce. According to one informant, seed is planted in August; another, in January. Nemesio Martínez has heard that a person who plants *zapote mamey* will die when the tree bears its first fruit, but he is unconvinced, since his mother took the risk and survived. The tree yields after about 10 years, and its fruit is available during summer months. Individual fruits are sold in Papantla at $0.20 pesos each; it is said that in the vicinity of Boca de Lima, this sapote is raised in sufficient quantity to be sold in lots of a hundred.

Another member of the same family may be considered semicultivated; it is the *zapote mante* (*Pouteria campechiana* (H. B. K.) Baehni, No. 220). Essentially a *monte alto* tree, the seed sometimes is planted in the maize field or in the house clearing, in November or December, which is when fruit is borne. After five years the tree produces; the fruit is eaten occasionally but seldom is sold.

The *zapote chico* (No. 191) is not cultivated, although both its fruit and its chicle sometimes are exploited (pp. 83, 162). The *zapote de calentura* (No. 198) may or may not be of the same family; it is another *monte* tree, uncultivated, whose fruit sometimes is eaten.

Of the persimmon family, the *zapote prieto* (*Diospyros ebenaster* Retz, No. 125) is planted from seed, in November and "grows anywhere."[64] After 5 years it starts to bear and fruit is available "about the time of Corpus Christi." A small amount is sold locally, but "no family has more than one or two trees."

The *zapote domingo* (*Mammea americana* L., No. 127) is an American cultivate but is said to have been unknown in Tajín until about 1900. "Because the tree gives nice shade," it sometimes is planted adjacent to the house. It is relatively rare and the little fruit which is produced is consumed locally.

We come now to two trees of the rose family. One is the *zapote cabello* (*Licania platypus* (Hemsl.) Fritsch No. 90), which is primarily a *monte alto tree.* "But some plant it, in October or November, when there is much rain." The edible fruit is produced "about All Souls' Day" and is sold in Papantla, where it reputedly is popular. Individual fruits bring $0.10 or $0.15 pesos; a "load," $8.00 pesos. At least two people in Tajín raise the fruit in sufficient quantity to sell by the load.

The *gurupillo* (*Couepia dodecandra* (DC.) Hemsl., No. 339) is another tree of the rose family which is cultivated half-heartedly. The fruit is collected when it turns yellow and is eaten raw; some sell, giving two or three fruits for $0.05 pesos.

The Totonac recognize three different kinds of avocado, each subdivided according to whether it produces green or black-skinned fruit. The seed of the "large avocado" (kukakλi) is planted in October or on Kings' Day (January 6) and begins to bear after about 8 years. The one yielding green-skinned fruit is called štákani kukvλił, and that which produces black-skinned, ¢e¢ake. The fruit is said to have more meat and to be of better flavor than that of the *aguacate oloroso* described below; and, in contrast to the latter, its leaves are odorless.

The *aguacate oloroso* (*Persea americana* Mill. var. *drymifolia* (Schlecht. & Cham.) Blake, No. 248) is regarded as quite distinct, owing to its aromatic leaves and its less desirable fruit. One form (kuka·ta štakčat) produces green-skimmed fruit; another (kuka·ta), black-skinned; the former is preferred. The tree is planted from seed and is said to start bearing after 3 years. The fruit is eaten with a tortilla but is not considered tasty. The particular virtue of this avocado lies in its leaf, which is regarded as highly medicinal and is especially prominent in magical cures.

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[64] Standley (p. 1128) considers the *zapote prieto* native to the East Indies, "but widely cultivated in tropical America." He adds that the tree "must have been introduced into Mexico at an early date, for it is mentioned by the older writers. Indeed, some writers have been inclined to consider it a native of Mexico . . ."

Another tree described as similar to the avocado is known as the *pagua* špaw; considered Totonac). Only one example is known to us in Tajín and it is immature; but several bearing trees occur in nearby San Antonio, where Totonac from as far away as Plan de Hidalgo go to buy. There is a firm belief that one who plants the *pagua* will die—according to some, when the tree blossoms, according to others, when it first bears fruit.[65] The fruit is described as "very large" and of distinctive flavor. It is said that the green-skinned form contains little fiber, while the black-skinned is generously endowed.

We have seen relatively few guava trees (*guayabo*, *Psidium guajava* L., No. 326). One informant says that the tree occurs both wild and cultivated; another, that it is not planted but appears as a volunteer, as the result of bird droppings. At best, it may be considered semicultivated. The fruit is eaten raw or cooked with sugar. The leaf is thought to be medicinal.

Passing mention may be made of the *anona* (No. 57), whose fruit sometimes is eaten. The tree is said not to be planted and again volunteers are attributed to bird droppings.

The calabash tree (*zacual*, *Crescentia cujete* L., No. 300) is grown in the yard, either from seed or from cuttings; it does not occur wild. There are two kinds, one bearing a large globular fruit, the other an equally large, but elongated fruit. Both are used extensively as household receptacles.

INTRODUCED FRUIT TREES

The mango (*mango*, *Mangifera indica* L., No. 282) is planted from seed. The fruit is green-skinned, not yellow, and the entire supply is consumed locally.

Citrus fruits include oranges, *limas*, and limes. We know only two citron trees in Tajín, although all four fruits are reported in the late sixteenth century for a number of Totonac settlements (*relaciones geográficas* of Misantla, Hueytlalpan, "Matlatlan" and Chila).

The sweet orange is called smugly *naranjo criollo* (native orange; we recorded on Totonac name). It produces "about All Souls' Day," and is planted at that time, in the milpa or the yard. The bitter orange (*naranjo de cucha*) is said to grow unsolicited. The fruit is eaten fresh or is squeezed into water to make a refreshing drink. Both leaf and juice are considered mildly medicinal. A sweet orange grafted to the bitter is said to be immune to attack by *arriera* ants. As noted above, the Totonac do not know how to graft, but Juan Castro, a local resident originally from Papantla, performs the operation upon request. Recently grafted trees are surrounded by a circle of ash, to discourage the ants, and for the same reason a wad of cotton is tied around the branch just below the graft.

Most oranges are distinguished merely as bitter or sweet, but one Tajín merchant with more outside contact than average boasts, by his own account, one tree of each of the following oranges: *China*, *Japonesa*, Washington, *nave* (navel?), and *sangre* (blood), as well as *naranjo de cucha.*

Out of 38 families, 5 have no orange trees, but the others claim from 1 to 30 trees apiece. However, a good many are young trees which still are not bearing. Not many sell. One man, the owner of 22 trees, sold 300 oranges in 1946, for a total of $10.50 pesos. Other sales appear to be even smaller.

The *lima* is not the equivalent of our lime, although the name suggests it. We collected no specimen, but Martínez (1937, p. 279) lists the *lima dulce* as *Citrus limetta* Risso. The fruit is not prized locally and trees are not plentiful. Of 38 families, 26 have one or more *lima* trees, but with one exception, of 10 trees, no family has more than 4. The *lima* is sold on small scale by a limited number of families, generally those definitely in need of funds. The price may be as little as $1.00 peso a hundred.

The occurrence of the lime (*limón;* límúnʌš, considered Totonac; *Citrus aurantifolia* (Christmann) Swingle, No. 332) is negligible. Of the same 38 families mentioned previously, 2 have each a single tree.

Except for the orange, the introduced fruits mentioned above are grown in a very desultory fashion. The banana and plantain, however, enjoy great popularity. That they play a major role in Tajín is clear from the fact that of 38 families, only 3 do not plant; and 2 of these have no cornfield, hence little opportunity. The number of trees per household varies from 1 to 200, with an average of about 50 per family. A single banana tree is reputed to produce 5 or 6 racemes annually, each of about 7 bunches (*manos*), each bunch composed of 10 to 20 individual fruits. One plantain (*plátano de Castilla*) yields 2 to 3 fruits to each *mano;* the other (*plátano macho*), 10 to 12.

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[65] This notion may be widespread, for Angel Palerm notes a similar belief, associated with the avocado, in Villa Guerrero, between Toluca and Ixtapan de la Sal, in the State of Mexico.

Of the 35 families with banana and plantain trees, 12 consume their total crop. One household has only young trees, not yet in production; another is unable to harvest, because of the inroads of the prairie dogs; and a third states that his plantings have been choked by *monte.* However, the remaining families have a surplus which is sold, either in Tajín or in Papantla. Most sell on small scale, by bunches; two sell by the raceme of approximately 7 bunches; and two more market by the load (*carga*), each load containing 40 bunches. The price varies from $0.10 to $0.50 pesos a bunch, although one informant claims to have extracted $0.85. Most are unable to calculate the cash returns, since sales are on a small scale; $60.00 pesos is the maximum annual income claimed by any family of our census.

The Totonac have a bewildering assortment of bananas, in addition to two plantains; for none are we able to give botanical determinations. All are called by the generic term of seakna, with qualifying adjectives, either in Totonac or Spanish. Some are distinguished by color, some by form, others by presumed provenience. All told, 12 distinct kinds of banana and/or plantain are recognized: *morado* (tutoqosa, ¢u¢oko, soˀqo seakna); *amarillo* (smukúko seakna); *verde* (kinia seakna); *moreno; enano* (tilín seakna); *durazno*, *pera*, or *bolsa; manzano;* Manila; Guineo; Roatán; *largo* or *Castilla* (kaná seakna; qanasa seakna); *macho* (kawi seakna). The two latter apparently are plantains. In general, Spanish terms are most used; the Manila banana, for example, is known merely as Manila seakna.

Bananas and plantains are grown from shoots which appear about the base of the trunk. The shoot is pulled out, together with the adhering "head" or root. The latter is placed in a cavity about 25 cm. deep, with the shoot emerging, not upright, but at a sharp angle. The root is covered with soil and, in time, the exposed shoot dies and a new, upright one replaces it. Planting takes place preferably on the Day of St. John (June 24) or the Day of Our Lady of Carmen (July 16). An effort is made to plant before dawn, when the moon is full, so that "large racemes of fruit" will result.

A novel technique is described whereby a shoot of *plátano de Castilla* will be converted into *plátano macho:*

> If one has only *plátano de Castilla* and wishes to grow *plátano macho*, he prepares the hole for planting. But instead of placing the head in it carefully, he stands well back and tosses it into the hole. It is planted in whatever way it may fall, and when it grows, it is *plátano macho.* It produces larger fruit, but in less quantity.

Almost every maize field has at least a few banana or plantain trees, and some have them in considerable quantity—interspersed with the corn, or in a long row along the path or the edge of the field. They are not planted in separate plots. In about a year, the tree produces its first fruit and may continue bearing as long as 15 years. Local bananas and plantains seem surprisingly free of disease.

COTTON

Native perennial cotton is grown occasionally in the yard or in the maize field; it does not occur wild. Since culinary and medicinal uses are minor, cotton is raised almost exclusively for its fiber. However, weaving is on the decline in Tajín; less than a dozen women in the entire community know how to spin and weave, and they find it less trouble to buy commercial thread. As a consequence, there is virtually no interest in the native cotton, and it is not unlikely that within another decade the plant may disappear completely.

In ancient times, the Gulf coast figured as an important source of cotton and of cotton textiles. Papantla and Tuxpan paid the bulk of their tribute to the Mexican overlords in textiles of various kinds (Colección de Mendoza 5:87), and in the late sixteenth century, the Totonac of Papantla dressed in cotton clothing (Relación de Papantla). About this same time, an abundance of cotton was reported for the Totonac of Misantla, where cotton armor was manufactured exclusively as an article of commerce (Relación de Misantla); and, according to various *relaciones geográficas*, the Totonac of Jojupango, "Matlatlan," Chila, and Hueytlalpan all produced an excess of cotton which they sold to buyers from other zones.

Hueytlalpan is said to have planted and harvested cotton only every other year, which does not imply a perennial variety; Jojupango, on the contrary, is said to have had fiber available annually. As an aside, it may be noted that the sixteenth-century Maya are credited with a small annual form, as well as with a large shrub which endured 5 or 6 years (Landa, p. 246).

At Tajín, most informants recognize two kinds of cotton—a white and a brown lint,[66] with the former preferred. A few seeds may be planted the Day of the Holy Cross (May 3), and "it is not long before they produce."

Five lots of cotton seed from Tajín were sent Dr. J. B. Hutchinson, of which only two germinated, both of white lint. One specimen he reports to be "fairly typical *Gossypium hirsutum* var. *punctatum*, of the Gulf of Mexico race.[67] Staple about 1 inch, poor quality." Dr. Hutchinson adds that this cotton is "fairly typical of the cottons of the Mayas" and that it is "the dominant cotton of Yucatán, Campeche, the Petén region of Guatemala, and British Honduras. It is also the perennial cotton of Florida and the Bahamas, and is believed to extend round the shores of the Gulf of Mexico from Honduras to Florida."

The other specimen is "an aberrant member of *G. hirsutum* proper, nearest *G. hirsutum* 'Upland,' but with quite extraordinary development of vegetative branches. Staple about 1 inch, poor quality." Dr. Hutchinson adds that this is a "unique type in my experience . . . in a class to itself."

In addition, a number of pressed specimens of leaf and flower were submitted to Dr. Moore. Of this lot, four (No. 8) are *G. hirsutum* L.; and four more (No. 9) are *G. hirsutum* L., var. *punctatum* (Schumacher) J. B. Hutchinson. However, a lone specimen (No. 43) has been identified as *G. barbadense* L., a cotton found chiefly in South America and the West Indies.

In short, one of our local cottons (*G. hirsutum* var. *punctatum*) is within its normal range; and another (*G. hirsutum* "Upland") is probably a more recent arrival in the area. The third cotton (*G. barbadense* L.) is, however, definitely intrusive, and its presence among the Totonac presumably implies contact, direct or otherwise, either with the Caribbean or with Central or South America.

GRASSES

Several grasses are grown in Tajín, for thatch, for animal food, or for both.

Zacate colorado (*Imperata contracta* (H. B. K.) Hitchc., No. 275) is useful for thatch but cannot be used as fodder "because it is very dry." It is said to reproduce through runners. A few plants may be stuck in an unoccupied corner of the maize field, and 10 yield sufficient grass to thatch a dwelling. One informant speaks of *zacate colorado* as thatch, but considers it not cultivated. Others distinguish between *zacate colorado* and another species known as *zacate de venado* (No. 288); the latter "looks like *zacate colorado* but is not; it is not good for anything; it may come out in a milpa and ruin it."

Two other grasses, *zacate paral* (*Panicum purpurascens* Raddi, No. 243) and *zacate guinea* (*Panicum maximum* Jacq., No. 245) are grown for fodder. The latter, either green or dry, also is used for thatch. Both are introduced, and informants know, at least, that the *zacate paral* is intrusive. The latter is said to produce seed "which does not grow"; seed of the *guinea* may be planted, "but it takes a long time to grow." Sometimes a few plants are placed in rows in the milpa; "two or three months later fodder is cut."

Still another grass, *zacate fino* (*Cynodon dactylon* (L.) Pers., No. 351) is grown from seed, in the house clearing, so that fowl may eat the seeds.

Sometimes a bit of sorghum (*Sorghum vulgare* Pers., No. 103) seed is tossed into the milpa. The plant, with the seeds removed, is tied in bundles, to serve as brooms.

The large bamboo (*tarro*, *Guadua aculeata* Rupr., No. 180) grows luxuriantly along arroyos in Tajín. It is not cultivated, and the supply now is greatly diminished, owing to demands for house building. However, it is said that in the Totonac settlements of Talaxca, north of Papantla, a smaller cane (koškíwi), not hollow, often is planted during the rainy season, and is used in basket making. This cane does not occur at Tajín, either wild or cultivated.

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[66] Similarly, the Popoluca, to the south, have a white and a brown lint cotton; the later is known as *criollo*, or native (Foster, 1942 b, p. 19).

In Tancanhuitz, in the Huasteca, we were told that only the Indians grow a brown lint cotton. In the mestizo town of Tancanhuitz, we saw only one perennial, white lint shrub, but the seed is said to have been brought from Axtla, also in San Luis Potosí. Farther south, in Tamazunchale, there are several plants of white lint perennial cotton.

[67] The distribution of the various cottons mentioned in this section will be found in Hutchinson, Silow, and Stephens, figures 9, 10.

GARDENS

The clearing which surrounds the house or the cluster of houses is the patio. It is bounded by *monte bajo*, rarely by anything resembling a fence. Within the patio, stand a few trees of the *monte* which have been spared—for shade, for decoration, or for some other reason. Most patios, for example, have a *chote* tree (No. 10), cropped so that it grows in a squat, mushroom form, and on top of it laundry is spread to dry.

Generally the yard boasts a few fruit trees, one or more shrubs of physic nut (No. 192), perhaps a cotton plant, a calabash tree, a bit of cane, and a variety of other plants already noted as grown in the house clearing. Often there is a small assortment of herbs, such as goosefoot, rue, or basil (Nos. 75, 317, 318).

Gardening possibilities in the patio are limited. The *arriera* ant presents a chronic hazard, and several women have made special pottery devices to protect their plants. They may be described as hollow doughnuts, bisected laterally.[68] One of these circular vessels is placed on the ground, enclosing the young plant. The cavity is filled with water and the ants are unable to pass.

Apart from the depredations of the *arriera* ant, domestic animals—fowl, pigs, dogs, and cats—run free. As protection, an old clay pot, innocent of base, may be inverted over a young plant. However, the flowerpot, and informal substitutes for it, are conspicuously absent in Tajín, although, by and large, they are highly characteristic of most Mexican communities, urban and rural. The Totonac simply do not grow plants in containers. Sometimes small sticks or split bamboos are stuck in the ground close together and form an enclosure about a tender plant. Occasionally, a small plot for flowers is fenced by upright poles or by bamboos, placed sufficiently close that fowl cannot penetrate.

Most families make an effort to have at least a few flowers growing in the patio, and many take pride in their small, well-stocked, and somewhat disorderly gardens. Girls wear flowers in their hair; young men decorate their hats with them; and there is a considerable demand for flowers to ornament the family shrine. On the whole, women seem to take more interest in flower gardens than do men, and, occasionally, a woman has requested that we bring her seed from the capital. In at least one case, a small flower garden was abandoned completely following the death of the woman of the household. However, men too are fond of flowers, and one, Matías Pérez, professes such profound affection for them that he informs us, not entirely truthfully, that three of his children are named, respectively, Flora, Florencia, and Florencio.

We made no attempt to list systematically the flowers found in Totonac gardens. Often plants are uprooted in the *monte* and brought home to be transplanted—as, for example, a beautiful climbing verbena (No. 201). Not infrequently, orchids are brought to the house and affixed to a nearby tree.

Flowering trees and shrubs are extremely popular—particularly the *flor de mechuda* (Nos. 55, 115) and the handsome *flor de mayo* (No. 151), which comes in various tones of cream, rose, and red. The *chanacol* (No. 153) also is common, but one thinks twice before planting it, for if this tree (perhaps only the red-blossomed form) grows in the patio, the daughters of the family "will not turn out well. They will not marry properly, but will go off with some man." The *mirasol* (No. 120) is infrequent. All flowering trees are planted from cuttings, and almost any small branch stuck in the ground will take root. However, a cutting which is brought home and taken inside the house prior to planting will not grow. It is possible that this belief applies specifically only to a form of hibiscus.

Common garden flowers include many kinds of roses, various plants disguised under the blanket term of jasmine, begonias, hibiscus, several kinds of lilies, what apparently is mock orange, and a great many more: *adelfa*, *chisme*, *mariposa*, *ilusión*, *lluvia*, *mechuda*, and so on. A few decorative garden plants, selected very much at random, appear in Appendix C (Nos. 76, 83, 115, 117, 120, 129, 151, 153, 201, 256, 261, 270, 289, 308, 328, 344).

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[68] Precisely the same sort of pottery protector for plants is found in mestizo communities in Jalisco and in Acatlán, Puebla (p. 218).

REMARKS

Although southern Totonacapan bore the brunt of early Spanish impact, northern Totonacapan was relatively immune and continued pretty well isolated until recent years. Nevertheless, it is obvious that the Totonac of the Papantla area must have had widespread, if indirect, contacts, through which a large series of plants native to both the New and Old Worlds reached them.

Maize, the staple food, is an ancient American cultivate, although its point of origin still is a moot question. In general, the corn collected in Tajín seems to have southern ties, and Dr. Anderson sees in it elements which suggest both the Isthmus of Tehuantepec (ftn. 34, p. 103) and Guatemala (ftn. 41, p. 105); above all, he sees significant "primitive South American influence" (p. 105). Historically, a negative aspect may be important—namely that the Papantla area of Totonacapan seems not to lie on the corridor by which "the big butt, yellow kernel, broad kernel, big shank, 8-row" maize[69] diffused from the Maya zone to the eastern United States (p. 105).

Vanilla, the chief cash crop of the Tajín Totonac, undoubtedly is a native American cultivate, although we suspect that its exploitation in the Papantla area is not of great antiquity. Sugarcane, the companion cash crop, is of Old World origin, but early was incorporated into the economy of the Gulf coast Indians.

Of cultivated legumes, both native and introduced forms are represented. Six kinds of beans and near-beans are grown by the Totonac, of which three (*Phaseolus*) are native to the New World; three others (*Phaseolus*, *Vigna*), to the Old.

The American beans include two kinds of *Phaseolus vulgaris* L., and one of *P. lunatus* L. There seems to be no general agreement concerning the precise origin of either species, although McBryde (pp. 135–136) makes a fairly good case for Guatemala.

Of intrusive forms, the presence of *Vigna* perhaps is not surprising, for this genus has diffused widely. However, the occurrence of the rice bean (*Phaseolus calcaratus* Roxb.) is less easily understood. Believed to be of Asiatic origin, it is cultivated "sparingly" in India and China (Bailey 3:2575). Even in its supposed native land, it enjoys scant popularity and is not likely to have reached Mexico through modern commercial channels. It is not impossible that it may be a casual byproduct of the Manila galleon trade. The Totonac claim to have known this bean only 15 or 16 years and consider it intrusive from the highlands.

The pigeon pea (*Cajanus cajan* (L.) Millsp.) is another member of the bean family which goes back ultimately to an Old World source. It is raised widely in tropical Africa and Asia and is said to be a staple food in southern India. The pigeon pea may be widespread in Mexico; it is grown in central Chiapas[70] and specimens have been collected in Tepoztlán, Morelos (Cravioto and Miranda, No. 211).

Other cultivated legumes include assorted vines, shrubs, and trees. All these appear to be native, except the common green pea, which is raised in negligible quantity, and perhaps the *flor de mechuda* (*Caesalpinia pulcherrima*), which is widespread "in the tropics of both hemispheres" and whose native habitat has not been determined (Standley, p. 424).

Likewise among the cucurbits, both native and introduced forms occur. However, all the important ones—*Cucurbita moschata* Poiret, presumably the closely related *C. argyrosperma*, and the gourd, *Lagenaria siceraria* (Molina)—are ancient in the New World. Evidence of *C. moschata* and of *Lagenaria* comes from a "pre-ceramic, pre-maize horizon" on the north coast of Peru (Whitaker and Bird, p. 12), and both have been found archeologically in North America (*C. moschata*, Carter, p. 19; *Lagenaria*, Whitaker, p. 62). In fact, the seed of one of our gourds is said to be surprisingly similar to archeological specimens from Arizona (ftn. 62, p. 137). Our *C. moschata* "seems to be related" to specimens from central Guatemala (p. 136).

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[69] Historically, another aspect of yellow corn is of considerable interest. In the old Huasteca—at least, in the Tancanhuitz-Tamazunchale stretch—yellow maize is preferred, and in the markets, one sees three or four lots of it to every one of white. Provided this preference for yellow corn proves to be general in the Huasteca, the implications may be significant.

In Mexico as a whole, yellow corn seldom is popular in the lowlands, but to this rule, both the Maya and the Huasteca present an exception. The linguistic relationship between the two languages is generally accepted; moreover, at least one ear of maize, collected by us in the southern part of the old Huasteca, is matched by specimens from Yucatán (verdict of Dr. Edwin Wellhausen). Accordingly, it is barely possible that we have the survival of an old association between yellow maize and an ancient linguistic or ethnic group. Since the Huasteca presumably separated from their Mayan relatives before the efflorescence of classic Mayan culture, a considerable antiquity is implied, with, moreover, the possibility of approximate dating.

Our several samples of yellow corn from the Huasteca have been delivered for study to Dr. Edgar Anderson and Dr. Edwin Wellhausen.

[70] Unpublished information from Efraim Hernández Xolocotzi. The pigeon pea has become firmly established in the West Indies (Bailey 1:613) and is important in parts of Central America. Johnson (pp. 231–232, pl. 37) reports it for certain groups of the "Talamanca division," although Stone makes no mention of this cultivate among the Boruca. In Honduras, the pigeon pea is sufficiently prominent to appear in a list of assayed foods (Munsell et al., table 2).

Of starchy roots and tubers, the Totonac have a fair share of New World cultivates—sweet manioc, arum, and arrowroot; in addition, they have the sweetpotato and the yam, which are known from both hemispheres.

The most important condiment in Tajín is the native, wild chili, in addition to which another form is cultivated. Goosefoot (*Chenopodium*) also is native, but coriander and fennel, both European, likewise are popular.

Of plants grown for medicinal use, the *Bixa* is New World; *Caesalpinia* (p. 147) has been mentioned above as of dubious provenience. However, several other plants—ginger, basil, rue, mustard, and a form of hibiscus—also are grown for medicinal use and appear to be of Old World origin. The Totonac attribute magico-medicinal properties to various plants with strong aromatic odor, particularly to the native aromatic avocado. In view of this association, it is possible that certain introduced plants of strong odor were accepted by the Totonac and were endowed with similar medicinal properties.

Fruit trees have been listed above with respect to supposed origin. There are numerous native forms, none raised on large scale nor with particular zeal. Of introduced fruits, undoubtedly the banana and plantain are of greatest economic significance, although citrus fruits are relatively plentiful and the mango also occurs.

Miscellaneous cultivates include both New and Old World plants. Among the former, may be mentioned the physic nut, tobacco, pineapple, and perennial cotton. If the postulated Asiatic strain in American cottons (Hutchinson, Silow, and Stephens, p. 437) be ignored, it may be said that all Tajín cottons are native to the Americas, but one species apparently has been introduced either from the south or from the West Indies (p. 145). Miscellaneous Old World cultivates include sesame, coffee, and various vegetables, such as cabbage, onion, and garlic. Grasses cultivated for forage and thatch apparently embrace both Old and New World forms.

So much for the provenience of Tajín cultivates. Although the Totonac have added a sizable series of Old World plants to their repertoire, the native American cultivates still are fundamental. And, despite the introduction of certain metal tools (ax, machete, and *coa*), the unembellished digging stick still is a basic implement.

One other aspect of Totonac agriculture likewise is outstanding, namely, the predilection for propagation through planting rather than seeding.[71] It may not be a matter of chance that the two Old World cultivates which have attained greatest importance in Tajín economy are sugarcane and the banana, whose propagation from cuttings and shoots accords well with the established local pattern.

Dr. Carl Sauer (letter, November 19, 1949) regards this preference as a circum-Caribbean feature, which contrasts sharply with the seed reproduction generally favored in Mesoamerica. He also suggests that the artificial germination of maize, chili, and one kind of cucurbit seed may be a reflection of this emphasis on plant rather than on seed. Unfortunately, we do not know the distribution of preplanting germination, which may be much more widespread than the literature indicates,[72] and which may prove a valuable clue to basic relationships.

Certain it is that the Totonac share a good many of the roots and tubers which are prominent in circum-Caribbean economy and which in both areas probably contribute to the prominence of planting in contrast to seeding. It seems likely that the participation of Totonac women in agricultural activities is more Caribbean than Mesoamerican. Conceivably, the custom of not heaping earth about the base of the maize plant may prove to be another trait in common. Although today in the Lesser Antilles, corn is planted in hills (letter of April 2, 1950, from Douglas M. Taylor), the Taino did not share this practice (Rouse, p. 523).

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[71] Pedro Armillas suggests, in conversation, that this may be a survival of the ancient "lowland agriculture" based on manioc, which Kidder (p. 121) suspects may underly "early Middle American civilization."

[72] The Totonac of the Zapotitlán de Méndez area, in the Sierra de Puebla, soak corn seed 4 days (information from Manuel Arenas). In the Tancanhuitz area of the Huasteca, maize is soaked prior to planting only when the season promises to be unusually dry (information from Tomás Martínez). However, in Panama, corn generally is germinated 3 days before it is sown (information from Hernán Porras); and in the Lesser Antilles, seed "is soaked for several days prior to planting" (information from Douglas M. Taylor). With these few exceptions, we have no record of artificial germination of seed. Such a trait might well escape attention in the field, unless specific inquiry were made or unless planting were observed first-hand.

Final conclusions concerning the affiliations of Totonac agriculture must await a series of thorough field studies in several strategic areas. These include, among others, the Mayan zone, where information on maize cultivation is gratifyingly complete but where companion crops have been slighted. We need detailed accounts of agricultural practices; and we need complete lists of cultivates, so that distributions may be more fully known. Such data should cast considerable light on culture history, and particularly on the history of native American agriculture.

SUGGESTIONS

On the whole, the Totonac have developed a stable and highly satisfactory system of crop rotation, through successive plantings of maize and vanilla, followed by a long fallow period. It seems desirable that this be maintained, unless it can be demonstrated that an alternative system would be more advantageous and equally permanent. Presumably, it would be unwise to think in terms of continuous cropping, which might reduce the fertility of the shallow topsoil to a dangerous degree; nor need we consider irrigation, owing to the rugged terrain and the chronic lack of water. Because of the welter of roots and standing stumps in fields, it would be equally unrealistic to recommend use of the plow; and, in any case, removal of the *monte* by root perhaps is not advisable, owing to the danger of grassland incursion.

In short, it appears to us that the best course is to maintain the present agricultural system largely as it stands, but to suggest greater exploitation of certain existing crops, and the introduction of a few new ones which might be accorded to the current pattern of agriculture. Such suggestions fall into two categories, those designed to improve nutrition, and those whose objective is to provide a cash crop to supplement vanilla and sugarcane.

In a later section (pp. 166–171), diet is treated in some detail, and here it will be necessary to anticipate that discussion. Evidently the Totonac are abundantly provided with starches and probably are moderately well supplied with vegetable oils. However, one of the most pressing local needs is a high yield protein crop. Dr. John Pitner has kindly provided samples of soybeans for distribution among Tajín farmers, and these are being tried currently. Whether or not they result, the Totonac have two possibilities at hand, among their established crops. Larger scale planting of the pigeon pea (*Cajanus*) might relieve the situation considerably, and greater exploitation of the *chipila* (*Crotolaria*) also should increase, although to a lesser extent, the amount of available protein. Even so, it must be remembered that what the Totonac really need is animal rather than vegetable protein (p. 170).

With respect to minerals and vitamins, more extensive planting and consumption of both *Cajanus* and *Crotalaria* again would be advantageous (pp. 169–170); and another local cultivate, *Leucaena*, produces a fruit, eaten chiefly by children, which should be beneficial if consumed more generally and in greater quantity (pp. 169–170). Although the Totonac are well supplied with fruits and make scant use of what they have at hand, we are attempting to add a new one to the local repertoire. Dr. Eilif Miller has been kind enough to provide a specimen of *Solanum quitoënse* Lam., for trial planting; it is being grown on our little plot of ground in Tajín, and if results are satisfactory, seed will be distributed among the neighbors. However, the plant is not prospering, perhaps because of low elevation and uneven rainfall.

We have no further suggestions to offer concerning plants which might contribute to improved nutrition. Below follow a number of suggestions designed to give Tajín a more diversified economy. On a straight subsistence level, the Totonac do quite well with maize, but their chief cash crop, vanilla, is uncertain at best. Often it cannot withstand the brief drought of spring and virtually the entire crop is lost. In that case, brown sugar produced from cane plantings is the only major source of cash, and it is inadequate.

Other disadvantages are associated with vanilla. The price is set by a small clique of merchants in Papantla, who profit more than does the Totonac producer. And, as noted above, the social ills of theft and homicide are closely linked with vanilla. These are not easy to correct. But if theft could be controlled, the producer might have an opportunity to dry his vanilla and thus be in a position to sell it for a better price. He could, in that case, market with greater facility to consumers in Mexico City and so eliminate, in part, the dependence upon the Papantla middleman.

We certainly do not suggest a complete replacement of vanilla, for it fits too well into the local setting. It is part and parcel of the crop rotation system, and, in good years, it is a sound cash crop. What we should suggest is less dependence upon vanilla and the addition of other cash crops to supplement it in lean years.

The possibility of adding commercial rubber to the local economy has been mentioned previously (p. 84). It, too, might be subject to drought, but it could do no harm to make an experimental planting of improved, disease-resistant stock of commerical rubber. If a few trees could be added to the heterogeneous assemblage in the milpa, a family might have a modest and relatively secure source of cash income quite apart from vanilla. Here, of course, planting presumably would be confined to those who own their own land, for it would be scarcely profitable to plant on rented terrain.

A Totonac farmer suggests that sesame might be converted into a profitable crop. Sesame has been raised, on a small scale, with some success. But the danger is that when sesame functions as a cash crop, there is a temptation to overplant, at the expense of maize. Manifestly, such a move would be poor economy.

Of other possibilities, Dr. Carl Sauer suggests a rotenone-bearing plant,[73] and Dr. George Harrar, African oil palm. Both require tropical conditions, and presumably both could be marketed in the United States—the former, for the preparation of insecticides; the latter, particularly for the manufacture of tin plate and terne plate. Mr. Virgil Pettit thinks that kenaf (*Hibiscus cannabinus* L.) might be preferable. He has supplied a small lot of seed for experimental planting, but offhand it seems likely that kenaf will not be suited to local conditions.[74]

This concludes our suggestions for cash crops. Should any of the above possibilities result satisfactorily in Tajín, the undue emphasis now placed on vanilla might be relieved.

FOOD [75]

Sahagún (3:130) disposes of Totonac diet with admirable brevity: "Their usual food and principal subsistence was chili, with which, after having been ground, they moistened the hot tortillas." This characterization holds, to the extent that both tortillas and chili are prominent in Totonac cookery; but, as will be seen below, other maize dishes are numerous, as are supplementary foods.

FOOD PREPARATION

MAIZE DISHES

Maize recipes are varied, despite the fact that the chief dependence is upon tortillas and maize gruel. Other dishes are prepared only occasionally, some, in fact, almost exclusively for fiestas.

Tortillas (čaw).—The tortilla is a thin, round, flexible maize cake which requires considerable time and effort to prepare. White corn is used almost exclusively, although occasionally one of the red corns, which turns white when steeped with lime, may be mixed with it. Sound ears must be used; that is, ears not eaten by weevils, not *podridas* (literally, "rotted"), and not sprouting. The two former result in poor flavor; the latter ears turn the lime water black and the maize is considered inedible.

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[73] It is said that the United States Government has made several unsuccessful attempts to foster the production of rotenone-bearing plants in Mexico. We have been able to find no published data concerning such projects, and the office of the agricultural attaché, in the Embassy in Mexico City, is not informed. The literature concerning rotenone is extensive, but deals more with processing than with growing. However, Dr. Dorothy Parker has been kind enough to locate a mimeographed report (Hermann), which describes the culture briefly. Commercially, rotenone is derived from two genera of the bean family, *Derris* and *Lonchocarpus*. Both are grown from cuttings, which means that the Totonac would not have to accustom themselves to a new and unfamiliar planting technique. Before any attempt were made to introduce rotenone-bearing plants on large scale in Tajín, obviously, experimental plantings, would be necessary. It is possible that neither plant would be able to withstand the brief spring drought, the occasional low winter temperature, and the chronic weed competition. Without experiment, it cannot be said whether soil conditions are suitable, or whether local plantings would have a sufficiently high rotenone content to be useful commercially. Moreover, Mr. Virgil Pettit has remarked recently, in conversation, that the rotenone market no longer warrants extensive new plantings.

[74] Kenaf requires "soil . . . deeply and thoroughly worked" (Crane, p. 340), both difficult in view of the shallow topsoil and the current digging stick technique. Although the plant apparently is able to meet heavy weed competition, it should be harvested during the flowering stage. Accordingly, not much latitude is allowed, and this assuredly would be a major obstacle in Tajín, where the agricultural program does not run on a rigid time schedule.

[75] Particularly in the latter part of this chapter, there is frequent reference to our herbarium specimens. A number in parentheses following the name of a plant refers to the herbarium catalog, which appears in Appendix C.

The first step is to shell the corn, an operation often performed by the children, or with their assistance.[76] The second is to treat the maize with lime. A large clay pot is half filled with water, and a small quantity is removed from it in a bowl. Into the latter is dropped a handful of lime for every *almud* (12 liters) of corn to be treated. The contents are stirred with the hand and the liquid returned to the large vessel. The sediment which remains in the bowl is thrown away or is added to the water which is kept on hand for laundry.

The large pot containing the lime solution now is placed on the fire. When the liquid reaches the boiling point, the shelled corn is added. Immediately the vessel is removed from the fire and the contents allowed to cool; or the coals are raked out and sherds placed beneath the pot, to cut off the heat. Under no circumstances is the maize actually boiled with the lime. Wood ash sometimes is used instead of lime but is considered less desirable.[77]

In most parts of Mexico, maize steeped with lime is called *nixtamal;* in Tajín, the more general name is *nixcón* (kawitˀ). The liquid, known as *nejayote,* may be used to prepare a couple more batches of corn, after which it is thrown away. Maize steeped in *nejayote* which has been used more than three times is said to turn yellow and is considered unpalatable.

Nixtamal sufficient for 3 to 5 days is prepared, and the corn is left in the solution until needed. It is said not to ferment if the correct proportion of lime has been used. Should the maize sour, it is fed to the poultry. In contrast, the Maya of Quintana Roo deliberately allow the dough to ferment, in the belief that it is more digestible (Villa Rojas, p. 54). The Maya of Yucatán prepare *nixtamal* daily (Benedict and Steggerda, pp. 159–160), as does every self-respecting housewife in the Huasteca (information from Tomás Martínez) and in western Mexico. These differences might be significant if distribution were better known.

The third step is to grind the corn. It is removed from the lime solution, rinsed with clear water, and ground; sometimes water is added from time to time during the grinding. The metal hand mill—like our meat-chopper, but somewhat larger and stronger—is popular among families who can afford such a luxury. Ordinarily it sits on a small board, fastened to the top of a substantial post set in the kitchen floor. As the ground corn emerges from the mill, it is received in a low clay bowl or shallow gourd receptacle. The chopper effects a considerable saving of time and labor because it takes care of the preliminary grinding; but, invariably, the maize is further ground on the metate—the tripod milling stone found commonly throughout Mexico. If the family has no metal mill, the corn is ground entirely by hand on the metate; three grindings generally suffice.

The ground, wet maize forms a sort of paste or dough (*masa*, skitit), a small amount of which is scooped up with the fingers from the far end of the metate and then is patted between the hands[78] to form a thin, round cake, about the diameter of a hotcake, but much thinner. This is placed to bake on a flat clay plate and, after being turned, is considered ready to eat. Tortillas removed from the baking plate are placed in a gourd with small aperture, in order that they remain warm and flexible; a cold tortilla becomes stiff and tough and, if possible, is heated before it is eaten.

Today, the average tortilla is between 12 and 15 cm. in diameter (cf. Sahagún 3:130); smaller ones may be made as a special gesture for guests or ailing persons. Extra-thick tortillas are prepared for animals, and sometimes the cook herself eats them. Under no circumstances are they offered to a guest. A child may request one, from preference, but unless he asks specifically, he is served a thin cake.

Tortillas—plain or embellished—are eaten three times a day, and some men consume close to 50 such cakes daily (p. 166). Sometimes, however, fried plantain is eaten in the morning and evening, instead of tortillas; and occasionally, at noon, roast plantain is substituted. Bread also is an acceptable substitute morning and evening, but not at noon. Even if a maize gruel is served at noon, it is accompanied by tortillas. Modesto González says that if he eats a certain kind of maize gruel (*atole de bolitas*), usually prepared for evening consumption, he does not care for tortillas. On the whole, the plantain is the only real substitute for the tortilla, and by most it is considered acceptable only at the morning and evening meals.

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[76] One family attributes its poor harvest to the fact that, as the children shelled the corn, they inadvertently spilled it and walked on it. "It is not a good idea to step on maize."

[77] A tortilla prepared with wood ash has 30 percent less calcium and 500 percent more iron (unpublished information from Robert S. Harris).

[78] In Mexico as a whole, including the Huasteca (latter information from Tomás Martínez), the tortilla is formed thus, by patting between the hands. But some peoples, such as the Popoluca of Veracuz, the Maya of Yucatán, and the Maya of Quintana Roo, mold the tortilla on a banana, leaf (Foster, 1940, p. 10; Benedict and Steggerda, p. 160; Villa Rojas, p. 54).

Tortillas form the basis for special dishes, such as *tochones* and *enchiladas*. The first is made of old, dry tortillas, which are cut in small pieces, fried, and sprinkled with salt. Of *enchiladas*, there are two principal kinds and a number of variants. One type of *enchilada* is made by brushing a fresh tortilla with chili sauce and sprinkling it with salt; the cake generally is doubled, so that the sauce is on the inner surfaces. The other *enchilada* (tačuˀla) is made by dropping a fresh tortilla into boiling chili sauce; it is removed and garnished with a bit of lard.

Atole (kéla).—Of maize gruels, there are many different kinds and, probably by extension, several other foodstuffs—sweetpotato, squash, and rice—are also served in the form of atole.

Young green ears, of any kind of corn not quite ripe, often are prepared as atole:

a. Atole de elote (gruel of fresh ears; škulím). The grains are cut from the ear and are ground on the metate. They are boiled with brown sugar and the resulting gruel served either hot or cold. One informant claims to soak the grains a day before cooking them so that they may ferment; another says that this gruel is not fermented.

Four different kinds of atole are made exclusively from white corn. Of these, one is reserved for very special occasions, while the others are prepared more frequently.

b. Atole blanco (skiˀjakela). This is made in small quantity, every 3 or 4 days. Its base is white corn steeped in lime. The maize is ground, water added, and the mixture boiled and strained. It is drunk thus, or brown sugar is added for flavoring.

c. Another atole is similar but is made of *nixtamal martajado* (taqsˀkela). The steeped white corn is broken roughly on the metate but is not thoroughly ground. The half-broken kernels are put in water to boil, and the gruel is drunk without being strained.

d. Atole de bolitas (gruel of little balls; skakâkela); called also *atole del norte* (northern atole; no explanation of name obtainable). This likewise is made of white corn. The maize, which has been steeped in lime, is ground finely, as though it were to be used for tortillas. To this, dough, salt, lard, and goosefoot (No. 75) are added. Some, perhaps not all, also add brown sugar. Wild dry chili is ground and incorporated in the dough. The latter is formed into small balls, about the size of marbles. These are boiled, and, as they cook, they are stirred with a stick. For us, the resulting dish is characterized chiefly by its overpowering chili flavor. The liquid is drunk and the little balls of dough are speared and conveyed to the mouth with a thin stick, either of *capulín* or of orange wood, which has been whittled to a point.

e. Atole de espuma (foam gruel) or *champurrado* (sakapu·put). Basically, this is the same as *atole blanco*, with the addition of brown sugar. Just before the gruel is served, foam from rapidly beaten chocolate is dropped on the top. This dish is prepared chiefly for the feast which takes place 80 days following the death of an individual.

We come now to a fermented atole which ordinarily is made from purple corn (*maíz morado*), although white may be substituted in case of necessity. Purple corn is grown exclusively for this dish, but is not treated with lime.

f. Atole agrio (sour gruel; skutˀkela, škutaˀkela; skuta, *agrio*; kela, *atole*). The dry uncooked kernels are broken lightly on the metate and are placed in warm water. The vessel is covered tightly and is left for at least 12 hours—longer, if necessary—until the contents ferment. When bubbles appear on the surface of the liquid, the maize is beginning to sour.

Then the broken corn, which has settled in the bottom of the vessel, is removed and is ground—either on the metate or in the metal mill. The liquid is heated and the ground paste added to it. The whole then is strained, to remove the hulls, which are discarded. The strained gruel is returned to the fire and cooked for about 2 hours. During most of the time, it is stirred with a stick, sometimes ornamentally carved (fig. 36). The cooked gruel is eaten unsweetened, or with the addition of brown sugar.

Atole agrio characteristically is a sort of mulberry color, owing to the purple maize. It is considered "very refreshing" and is especially popular during warm weather. It is made in considerable quantity—using a *quartillo* (3 liters) or half an *almud* (6 liters) of maize. Invariably, this is the atole which is served to men who come to the house to assist in clearing fields, in planting, or in any other major chore.

Moreover, it is said that years ago, *atole agrio* was served at weddings instead of the chocolate and bread which are favored today. The gruel was dished out in small "cups" made of halves of the fruit of the calabash-tree. On the surface of each serving of atole, a flower or bird design was formed with powder prepared from squash seed (*pipián*), which had been toasted and ground. In this case, the gruel was known as taka¢ɔqniˀi (taka, *encima*; ¢ɔqniˀi, *pintado*).

In different parts of Mexico, there are quite different ways of preparing atole, and while virtually nothing is known of the distribution of these recipes,[79] three of the principal ones are

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[79] It is highly desirable that a study be made of maize cookery in general, for there is every indication that recipes will fall into well-defined zones. It is not unlikely that such zones will coincide with old ethnic areas, or with the distribution of certain kinds of maize.

For example, in the Autlán-Tuxcacuesco district of Jalisco, atole invariably is made of *nixtamal*, that is, of maize steeped with lime. But in Tultitlán, in the State of Mexico, *nixtamal* is not used for atole. There, the maize is boiled without lime, or found in Tajín. For example, (1) the white-corn recipes given above all are based on *nixtamal*. However, (2) the *atole agrio* is made of boiled corn which has not been treated with lime. In addition, (3) an atole made of toasted, ground corn is used in Tajín exclusively as a remedy for diarrhea:

g. Atole de maíz tostado (štačučuˀ kúši). "This atole is taken as a medicine, not for pleasure." The kernels are toasted on the baking plate, then are ground to powder. Water is heated, with brown sugar, and the ground maize meal added to it. The whole is allowed to boil, then is drunk.

Similarly, to treat diarrhea, rice is toasted, ground, and the meal made into a gruel.

This concludes the Totonac series of maize atoles, but for the sake of convenience, sweetpotato, squash, and rice gruels may be mentioned here.

h. Atole de cuchara (spoon gruel); *atole de camote* (sweetpotato gruel; mantáqkela). Like the atole made from purple corn, this is fermented.

According to one informant, it is made in the same way as the *atole de nixtamal martajado* (see *c*, above), but sweetpotato is added to the broken corn, and the whole is allowed to stand about 3 days, until it sours. This atole is not strained; it is known as "spoon gruel" because it must be stirred constantly as it cooks.

Another informant gives a different version of the same receipe. The broken *nixtamal* is boiled, being stirred constantly. Separately, sweetpotato is crushed on the milling stone. Water is added to the raw sweetpotato mash and the mixture allowed to stand. When the liquid is clear, it is poured off and placed in another vessel—not that of the *nixtamal*. The remaining sweetpotato mash then is added to the cooking maize. After a short while, the water drained from the raw sweetpotato is added and the whole allowed to ferment. The following day, brown sugar is added.

i. Atole de calabaza (squash gruel; šakela nipši). Raw, ripe squash is cut in hunks and boiled. When cooked, it is taken from the vessel and the rind removed. The flesh of the squash then is ground and returned to the hot liquid together with brown sugar and stick cinnamon. It is said that some cooks add *nixtamal*, which has been well washed but not ground; others serve squash gruel without the addition of maize.

j. Atole de arroz (rice gruel; šakela *arroz*). Rice is boiled alone, or with either white or brown sugar; some add stick cinnamon. Once cooked, the rice may be ground, but many serve the gruel with the kernels entire. This is drunk at meals instead of coffee.

Tamales.—In Tajín, tamales are not known as such unless their filling happens to be of meat. Nevertheless, there are numerous maize dishes which basically are tamales, although diverse names cloud the affinity. So also does the fact that tamales with meat filling are wrapped in banana leaves, while other kinds of tamales have a corn-husk covering. In the latter case, the dough and filling are placed in the slight hollow at the butt of the husk; the top of the latter is doubled over and securely tied in place with a narrow strip of husk.

Both tamales proper and the related forms are steamed. A cribbing of twigs is placed on the floor of the clay cooking pot, and on this bed the tamales are arranged so that they do not come in direct contact with the water. As the tamales are put into the vessel, the mouth of the pot is lined with leaves left over from the wrapping—either banana leaves or corn husks. These are arranged vertically around the inner rim and extend well beyond it. When the vessel is full, the leaves are folded over, to serve as a cover.

a. Piques (Totonac name not recorded). This is the simplest form of *tamal*. The *nixtamal* is ground and salt and lard added. Without additional flavoring and without any filling, the paste is wrapped in dry corn husks and steamed.

b. Bollitos de elote (tánkolo). Several ears of fresh corn are collected and the husks cut from them with great care, since they are to be used as wrapping. With a knife, the kernels are removed from the ear. They are ground on the metate, then reground, with the addition of brown sugar. Unmelted lard and ground cinnamon stick are added and the whole is well mixed. Small amounts are wrapped individually in corn husks and steamed.

c. Bollitos de anís (fennel roll; saksí wati). The *nixtamal* is well ground, then reground with fennel (No. 88). The mixture is moistened with sugarcane juice and brown sugar and lard added. The whole is well mixed and small amounts are wrapped in dry corn husks and steamed.

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it is toasted, ground, and mixed with water. In neither of these areas is soured atole known.

However, in the little village of San Francisco, near Tamán, San Luis Potosí, atole is made either of *nixtamal* or of dry, ground maize, to which water is added; in both cases, the mixture is allowed to ferment. In Huastecan villages near Tancanhuitz, the favorite atole is made from white corn, ground dry, then placed in water to ferment for 24 hours. Atole also is made of white maize dough, sweetened with brown sugar; this form is not fermented. Soured atole is reported from Tepehuacán, near Molango, Hidalgo. In short, fermented atole may be quite general in eastern Mexico, but without systematic inquiry, we can do no more than guess.

The Maya share the three basic Totonac recipes for gruel, making it of *nixtamal;* of maize "briefly cooked in water without lime"; or of the toasted, ground kernels. It is interesting to note that one kind of atole is prepared "from maize which has been soaked in water for three or four days." This assuredly suggests soured atole, and it may be noted, furthermore, that the Maya of Quintana Roo make their tortillas of soured dough (Villa Rojas, p. 54).

This is a festival dish, served particularly at the feast which takes place 80 days following the death of an individual.

d. Púlacles (Totonac name said to be the same). These are tamales with a filling of bean paste, ordinarily made of the *frijol de Castilla*. The beans are boiled until nearly dry. In the meanwhile, chili of any kind is ground, together with wild tomato. Oil is extracted from sesame, squash seed, or the physic nut (*Jatropha*, No. 192) and is added to the beans, together with the chili and tomato. Coriander and the shredded leaves of *acoyo blanco* or *acoyo colorado* (*Piper*, Nos. 72, 184) are dropped in for good measure. Some use the young stems of *acoyo*, but this is said to give a "very strong flavor."

Dough made of ground *nixtamal* is flattened on the palm of the hand; a bit of the bean mixture is slapped on it and the dough folded over. A wrapping of corn husk or of *papatla* (No. 128) leaf is applied, and the *púlacles* then are steamed. In most households they are the standard dish for Fridays during Lent.

e. Capitas (pulákstapu) also are made with a bean filling. Brown sugar is added to the ground *nixtamal*, and with the palm of the hand the dough is pressed so as to form an even layer on a cloth which is placed over the grinding surface of the metate. On top of the dough is spread a layer of cooked beans (not ground) and brown sugar. The cloth then is lifted at the far end of the metate and is doubled toward the worker, so that about 15 cm. of the dough and filling are folded over the lower layer. The cloth is pounded lightly, then peeled from the top. Again, it is doubled toward the worker, so that another 15 cm. of overlap follows. The end result is alternating layers of dough and beans, enclosed within maize dough. With a sharp bamboo, pieces are cut from the "loaf" and are wrapped in dry corn husks, to be steamed.

f. Tamales (watˀ). Basically, these are similar to the preceding dishes, but differ in that they have meat filling and are wrapped in banana leaves instead of corn husks.

A number of banana leaves are hacked from the tree and are placed one on top of another. The stack is set on the table and, with a sharp knife, the leaves are cut in squares whose size is determined more or less by the width of the leaf. The leaf squares then are dropped into boiling water or are braised on the baking plate, so that they will be soft and pliable. Such treatment also is necessary "so that the juice of the banana will not be released."

In the meanwhile, the *nixtamal* is ground, then reground with a bit of salt. The filling is prepared by grinding the cultivated chili with the wild tomato to form a sauce. No garlic, onion, goosefoot, or coriander goes into tamales. The raw meat—either pork or fowl—is cut in small pieces and mixed with the sauce.

A bit of the maize dough is placed on one of the leaf squares and, on top, a dab of meat and sauce. The leaf is folded so that two edges join one another and these again are doubled. The ends then are folded toward the center and the contents thus thoroughly encased. The tamales are packed in a pottery vessel, on a cribbing of twigs, and steamed.

Sometimes the tamales "refuse to cook," or some cook well and others not. This difficulty is attributed to the "touch of a dead man" (*los tentó el muerto*). To avoid this disaster, a few leaves of *aguacate oloroso* (No. 248) are tossed into the fire.

By and large, tamales are prepared for very special occasions: for a celebration which takes place after the birth of a child; for All Souls' Day; and for the festival 80 days following the death of a person. For these occasions, tamales are socially correct; but they definitely are not acceptable for weddings. For festivals generally, meat with *mole* sauce is preferred to tamales, because a serving of *mole* involves less meat than does one of tamales; "*mole* is more economical."

Other maize dishes.—Except for tamales and related forms, maize is not combined with meat or beans. There is, for example, no equivalent of the *pozole* of western Mexico, which is essentially a hominy cooked with pork or fowl. The remaining Totonac maize dishes are chiefly cakes or breads, although for convenience, we have included at the end of this section *pinole*, a confection made of toasted and ground corn kernels, and two recipes based on maize fungus.

a. Gorditas (little fat ones; stululú čaw). The meal is prepared as for tortillas, but the cake is not formed by patting. It is, however, shaped in the hands. The resulting cake has the same diameter as a tortilla, but is about 2 cm. thick. It is cooked on the baking plate, and upon being removed from the fire, the upper surface is mashed with a spoon and lard and chili added. The latter may be wild chili ground to a powder, or it may be a sauce prepared by crushing wild chili with tomato. A variant, combined with dry pea paste, is described later.

b. Bocoles (čaw; same name as tortilla). These are essentially the same as tortillas, but salt and lard are mixed with the dough. Again, the cake is formed in the hands, but is not patted. It is small (5 cm. diameter) and somewhat thicker than a tortilla. As usual, it is cooked on the flat baking plate.

A sweet version is prepared by adding brown sugar, lard, and fennel to the dough, which then is formed into cakes as just described.

c. Tortilla de elote (fresh corn tortilla; iškakeˀ). This dish is related more in name than in fact to the regular tortilla. It is made of fresh, thoroughly ripe corn, not quite dry. The grains are cut from the cob with a knife, an effort being made to remove them entire. The kernels are ground and mixed with brown sugar and lard. A small amount of the paste is placed between banana leaves and the upper leaf patted to spread the dough in the form of a round cake. The latter is placed on the baking plate without removing the leaves. When the cake is turned, the leaf is peeled from the cooked side. These fresh corn cakes are eaten hot.

d. Titines (Totonac name not recorded) are made of *nixtamal* ground without the addition of water. The dough is placed in the sun to dry for a day or two, following which it again is ground on the metate, with the addition of brown sugar and fennel. The dough is packed tightly in a commercial mold or in an improvised one made of yucca leaf. The leaf is torn lengthwise in strips, each about 1 cm. wide and 20 cm. long. The ends of each strip are tied and are secured with a small wire, to form a circle into which the dough is packed. The cakes are cooked in an oven, if one is available; if not, on the flat baking plate, being turned so that they may cook on both sides.

e. Cernosas (taš̌puyújun). *Nixtamal* is ground; salt and lard are added, working lightly with the hands, so that the dough may be well mixed, but without exerting pressure. A handful of the resulting mixture is removed and is sprinkled lightly on the hot baking plate, in the form of a disk. The result is a light, somewhat spongy, unsweetened cake.

f. Totopos (tamáktin, untoasted; ska·wawa, toasted). These are sweet cakes. The *nixtamal* is well washed and is ground until it forms a fine paste. The ground seed of fennel and brown sugar are mixed with lard and added to the dough; some include an egg or two. When the dough is well mixed, it is formed into a thin sheet, using the hand stone of the metate. With a bamboo splint, which has a sharp edge, the dough is cut into rectangles, which are cooked on the flat baking plate.

g. Pemoles (Totonac name not recorded). The *nixtamal* is ground and is placed in the sun to dry, "until it is like flour." It then is sifted over a table. A bit of fennel and brown sugar are ground together on the metate and, together with sesame oil or cold lard, are mixed with the meal. Two eggs are kneaded in. When the dough is ready, it is spread on the table in sheet-form and is cut in small squares with a knife. The resulting cakes are quite thick. They are arranged on a tin tray and are baked in the oven.

h. Pinole (škapat‘) is made from any kind of corn. The kernels are toasted and ground, and grated brown sugar is added. The powder is eaten as a confection; for small children, it is moistened with water, "so that they will not choke."

i. Maize fungus. The black fungus which sometimes appears on the ears of corn is attributed to the fact that some inconsiderate person has defecated in the milpa. However, the fungus is not spurned as food.

It is collected from several ears and brought to the house. The black substance is ground with salt and goosefoot and is combined with maize dough to form a cake which an informant considers a variant of the *gordita* described above. Sometimes the fungus is cooked with goosefoot, wild tomato, and lard, to form a sort of broth.

OTHER STARCHY FOODS

By any standards, the Totonac are well supplied with starches. Apart from maize, starchy foods include plantains and bananas, cucurbits, and assorted roots and tubers.

Plantains and bananas.—Most families have at least a few plantain and banana trees, and some have a considerable excess of fruit. Accordingly, even if by chance a given family should have an insufficient supply, fruit is available locally at small cost. To avoid depredations of the opossum, it is cut green and the racemes hung from the rafters of the kitchen to ripen.

As a rule, bananas are eaten raw, plantains, cooked. Both kinds of plantain (*plátano de Castilla* and *plátano macho*) are roasted in the ashes near the hot coals, being turned frequently until they are cooked. If the fruit is ripe, the skin is left on; if green, the skin is removed prior to roasting. Salt and lard may be added to make the dish more tasty. Plantains often are fried or boiled; in the latter case, twigs are placed on the floor of the pot, so that the fruit will not stick.

Sometimes green plantain (*plátano de Castilla*) is peeled and boiled, after which it is mashed and fried. In this form, it is eaten with beans, as a substitute for tortilla. Or, three or four plantains or bananas of any kind may be ground and the paste mixed with maize dough; the mixture is patted into cakes (čačau seakna), which are baked on the clay griddle.

It is said that years ago there was a great cold spell and the maize crop failed. As an emergency measure, the root of the banana (plantain?) was ground and mixed with maize dough to make tortillas.

Cucurbits.—Although the two principal squashes raised by the Totonac are of closely related species, they are utilized in quite distinct ways. One (*calabaza*) produces edible flesh; the other (*pipián*) edible seeds; neither blossom is eaten.

Young *calabaza* is served as a soup; it is cut in small pieces and is boiled with salt, tomato, *cebollina*, goosefoot, and green, wild chili, which has been ground.

Once the *calabaza* is mature, it is cooked with brown sugar, to form a preserve. The latter is eaten following the noon meal; or it is nibbled on in mid-morning, as a between-meal snack. It is not served at breakfast or supper, as is almost invariably the case in west Mexico. A special form of *calabaza* is said to have a thin rind and to be so sweet that it does not require the addition of brown sugar. This is steamed and eaten as is the more common type.

Atole of *calabaza* has been described previously; the same kind of squash also is made into a *tamal*:

Tamales de calabaza. Young squash is cut in small pieces and vegetable oil—of squash (*pipián*) seed, of sesame, or of physic nut (No. 192)—is added, together with salt, lard, and green, wild chili. In another container, maize dough is thinned with water. A dab is dropped on a square of banana leaf, and on top is placed some of the squash mixture. The leaf is folded to enclose the filling and the tamales are steamed, as described previously.

The flesh of the other squash, the *pipián*, is regarded as inedible. When the fruit is young and tender, it is opened and the "entrails" (*tripas*) which surround the seeds are ground and boiled with maize dough to form a stew (*huatape*). However, it is the seeds of the *pipián* which are most used. They are dried, toasted, and ground, to provide the Totonac with one of their chief vegetable oils.

Other cucurbits are grown locally but are of negligible importance. The *chayote* is boiled without salt and is allowed to cool. Eaten cold, it is considered very thirst-quenching.

The *calabaza de melón* (p. 137), apparently of recent introduction and not grown generally, is prepared in Tajín as it is in the mestizo town of Gutiérrez Zamora. The melon is peeled and cut in pieces. These are soaked in water to which a bit of lime has been added, then are boiled with brown sugar.

Two cucurbits are eaten raw: a sweet melon, (*Cucumis*, No. 361) and several kinds of watermellon. Occasionally, an individual may be inspired to suck the flesh from the seeds of the ripe fruit of *amor* (*Momordica*, No. 197). Children are prohibited from indulging in this pleasure, since it is believed to provoke nosebleed.

Starchy roots and tubers.—Manioc is eaten principally in November and December. Some consider the white more tasty than the yellow. The roots are boiled, without salt; or they are boiled with either white or brown sugar. Sometimes they are tossed into the copper vat in which cane juice is being converted into brown sugar. Otherwise, when manioc is boiled, a layer of shredded corn husk is placed on the bottom of the pot and another on top of the roots; this is "to preserve the steam." One woman recommends the use of pulús leaves (No. 3), green or dry, instead of corn husk.

Sweetpotatoes also are available during the winter, from December through February. The three kinds are prepared alike, being roasted, boiled without salt, or boiled with brown sugar. Ordinarily, a bed of pulúš leaves is placed on the bottom of the vessel, the sweetpotato added, and another layer of pulúš arranged on top. With this treatment, the boiled "sweetpotatoes burst"; if corn husk is substituted for pulúš, they turn out dry and less palatable. In addition, sweetpotato often is served in the form of atole, the recipe for which has been given above.

The yam is available the year round. Its aerial tubers are roasted or are boiled with or without salt, then are peeled, and eaten. Although we were given a graphic description of the extraction of the tuberous root with the aid of the digging stick, it appears that the root is not eaten. The Maya also have the yam, but utilize it differently (Benedict and Steggerda, pp. 161–162).

Various dishes center about the arum (pisís, No. 4), which is a Lenten specialty; at that time, the corms are at their best and later in the year they are woody. On Fridays during Lent, an atolelike dish is made by boiling, peeling, and grinding the corms. The mash is added to a pot of boiling water, with salt. When the cooked brew is removed from the fire, a spray of goosefoot is added, and the liquid is drunk as if it were atole. For Good Friday, the corms are boiled, peeled, and fried in lard. The leaves are not considered edible.

A stew (*huatape*) also is made of arum, which is boiled, peeled, and ground. Meanwhile, garlic and onions are boiled together. To the latter, the arum mash is added, together with salt, coriander, and a spray of goosefoot. Arum sometimes is roasted, but "it must be well cooked, or it will sting the tongue." Should this take place, a pinch of salt relieves the discomfort.

Bermuda arrowroot (No. 227) is available during the spring months; generally it is eaten with beans. The underground stem is broken at the joints into short lengths which are peeled and boiled. They are removed from the liquid and ground on the metate; the paste then is returned to the broth and the concoction allowed to stand until the fiber collects on the floor of the vessel. The thick liquid may be added to beans, or it may be drunk alone, as if it were atole. Boiled arrowroot sometimes is added, unground, to beans.

The raw, tuberous root of the *jícama* (presumably *Pachyrhizus;* no specimen) is another starchy product. It is little grown in Tajín and is eaten only occasionally, as if it were a confection. It is, however, prominent in the offering prepared for the dead on All Souls' Day.

Additional starches are acquired exclusively by purchase, either in the local stores or in Papantla. They include rice, macaroni, a variety of other *pastas*, marketed in various forms for use in soups, as well as commercial crackers and bread.[80] From time to time, someone in Tajín makes bread in quantity, for sale to the neighbors. And a Totonac who goes to Papantla often brings back rolls or sweet bread for the family.

PROTEIN FOODS

The ancient Totonac priests of "Cempoala" are said to have eaten, in the middle of the morning, "sometimes meat, other [times] beans . . . prepared in many ways" (Las Casas, p. 461). In Tajín today, eggs and legumes supply the chief protein elements of the diet, followed in importance by meat, game, and fish.

Eggs.—Eggs are added early to the diet, and one 14-month old child, still nursing, is said to be quite capable of consuming an egg and five tortillas daily. Since most families keep fowl, the supply of eggs usually is generous. They are a common dish in most households and are prepared in various ways, none very complicated.

Boiled eggs are a common breakfast dish, eaten with tortilla and chili sauce. Sometimes eggs are "broiled" (*asados*). A bit of salt is dropped on the baking plate, and on top of it an egg is broken. Ash is blown from burning embers, which then are placed on top of the griddle, close to the egg. The latter is served with chili sauce.

Probably most often eggs are fried in lard. A frugal housewife gives the following recipe for five persons: Three eggs are fried; over them is poured a sauce made by grinding together 8 peeled chilis (of the kind known as *pico de pájaro*), about 10 wild tomatoes, and salt; to the resulting paste, water is added.

For an ailing person, an egg is prepared in a special way. A small amount of maize dough is ground to a fine paste and is diluted with water. An egg is broken into the dough, and salt and finely chopped onion added. The result is of the consistency of "thick atole." It is poured on the hot clay griddle where it solidifies, later being turned, so that it may cook on both sides.

It has been noted above that eggs sometimes are added to certain kinds of maize cakes.

Beans and peas.—Two kinds of tamales (*púlacles* and *capitas*) with bean filling have been described above, in connection with maize cookery. It also has been mentioned that cooked arrowroot, either ground or entire, often is combined with beans.

Beans "of any kind," including cowpeas and the pigeon pea, are eaten green or dry. In both cases, the beans are shelled and boiled. Coriander, goosefoot, and one of the following vegetable oils are added:

a. Dry squash (*pipián*) seeds are toasted and ground on the metate; a small amount of water is added. The paste is squeezed in the hand to extract the oil. The now dry pulp, known as *orejitas de pipián* (little ears of *pipián*) is added to the beans. Later, when the latter are served, the oil is poured over the top.

b. Toasted sesame seed is ground and added to the beans as they cook.

c. The dry physic nut (*Jatropha*, No. 192) is shelled, toasted, and ground; and the resulting paste is cooked with the beans. Sometimes it is combined with sesame, but never with squash seed; nor is the latter mixed with sesame.

d. Seed of the local perennial cotton is toasted and crushed lightly on the metate, to be added to the beans. Relatively few families use this oil; it may have been more popular before the introduction of sesame.

Shelled green beans sometimes are prepared as a stew (*huatape*). They are boiled with salt, and maize dough, thinned with water, is added as thickening. Different cooks favor different seasoning. One adds a small leaf of *aguacate oloroso*, (No. 248) together with ground wild chili, either green or dry. Another uses either *quitacalzón* (*Phytolacca*, No. 29) or the aromatic avocado. Some prefer the shredded leaves of *acoyo blanco* or *acoyo colorado* (*Piper*, Nos. 72, 184).

Dry beans of any kind often are fried. First, they are shelled and boiled. Onion is browned in lard; the beans are drained and are added to the hot fat and onion. With a wooden spoon, they are mashed thoroughly. Later, the bean broth is added and the mixture allowed to simmer until it thickens.

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[80] A local shopkeeper says that the items most in demand in Tajín are lard, rice, crackers, salt and kerosene.

Sometimes cracklings are added to the boiling beans, together with goosefoot, *cilantro extranjero* (*Eryngium*, No. 276), *cebollina*, and green, wild chili. This plate is known as mantikastápu, apparently the Totonac term for bean (stapu), prefixed by the Spanish (*manteca*) for lard.

The green pea is little eaten. Young peas are boiled in the pod, then shelled and served as a vegetable. Dry peas are boiled and ground on the metate. When the paste cools, a dab is combined with maize dough to form a thick, round cake (*gordita*), which is cooked on the baking plate. The top of the hot cake is broken with a spoon and a sauce of fried onion, tomato, and wild chili is poured over it. If it so happens that cheese is available, it is sprinkled on the top. Sometimes small cakes are made by combining maize dough with green peas and flakes of dry fish.

Fowl.—The usual techniques for killing fowl have been described previously (pp. 91–92). A turkey is plucked immediately, but a chicken is doused first in hot water, so that the feathers may be removed more easily. The plucked bird—turkey or chicken—is singed in a rapid blaze made with paper or corn husks; then, as a bleach, it is rubbed thoroughly with maize dough and rinsed in clear water. Some prefer to wash the bird with soap and water.

Different housewives have different ways of cleaning and sectioning fowl. In any case, all remove the viscera and the oil deposit at the tail. These are discarded, "but it is not good that the dogs drag them about." They are collected and burned, or they are taken to the forest and placed high in a tree.

As a preliminary to further preparation, fowl often is braised on the coals or is "smoked." In the latter case, the meat is impaled on sticks which are stuck in the earth or mud surface of the hearth, close to the kitchen fire. Thus treated, meat will last 3 or 4 days; otherwise, it may become infested with maggots. If stew is to be made, the bird is smoked, even though it is to be eaten at once. However, if tamales, soup, or *mole* are to be prepared without delay, smoking is unnecessary. Following the searing or smoking, the carcass is cut in smaller sections; when the dish is to be served to field workers, "the pieces are *very* small."

In addition to tamales, there are three principal ways of serving fowl—in soup, in stew, or in *mole* sauce. Strangely enough, these three dishes seem not to have Totonac names. *Huatape* (stew) sounds Totonac to us, but informants consider it a Spanish term.

Soup (*caldo*, literally, broth) generally is made of chicken; "turkey does not have a good flavor in soup." The sectioned bird is boiled in water to which a bit of salt has been added. When it is cooked, onion, garlic, and wild tomato are fried and added to the liquid, along with a spray of mint (*hierbabuena*) and coriander. Some add cumin seed, but not all care for the flavor. If the chicken is tough and "does not want to cook," a few grains of *nixtamal* (maize steeped with lime, but not yet ground) are tossed into the boiling brew.

Stew (*huatape*) is similar, but maize dough diluted with water is added as thickening, being stirred so that it will not form balls in the boiling broth. Some add a spray of mint (*hierbabuena*) and either tomato, or ground, dry, wild chili, to give color. Others boil the meat with salt and add chili and a leaf of *pimienta* (No. 30).

For *mole*, the fowl is sectioned and boiled, and the sauce prepared as follows:

> *Chile de color* (purchased in Papantla; not grown locally) is toasted on the baking plate. The seeds are removed, fried in lard, and ground. The chili is placed in water to soften, then is ground.
>
> Dried, cultivated chili (*chilpoctli*) is boiled and the veins removed; it is rinsed three times in water, then is ground, later to be fried in lard.
>
> Meanwhile, stick cinnamon, cloves, and peppercorns (all purchased in Papantla) are ground, sometimes together with a cake of chocolate. A ripe plantain (*plátano de Castilla*) and white bread (usually bought in Papantla) are sliced and fried.
>
> The *chile chilpoctli* next is fried, and to it are added the ground ingredients, including the flesh and seed of the other chili. If chocolate has not been crushed with the dry spices, a cake is broken in small pieces, which are dissolved in a bit of hot broth, and the liquid added to the main mixture. The result is *mole* sauce.
>
> Some of the broth is removed from the vessel in which the fowl is boiling and the sauce added to it. If the resulting liquid is too thin, it is allowed to simmer until it thickens.

A number of wild birds are eaten—the pheasant, dove, quail, and several others, including a small parrot (*perico*) (No. 27, table 21, Appendix D). One family has in its kitchen three cages of wild doves which are being kept for the table. Although the birds are sufficiently tame to run about the house, their wings are clipped. Wild birds generally are eaten in soup or stew. Modesto González maintains that they may be served in *mole* sauce, but others disagree; practice may vary from one family to another.

Beef and pork.—Beef is purchased occasionally in Papantla. Generally it is served in soup (*caldo*), seasoned with garlic, onion, tomato, coriander, and mint. Once in a while, the head of the family buys a bit of jerked beef, which either is broiled or fried. Rarely is beef served in *mole* sauce.

Pork is infinitely more popular and is prepared usually as tamales or with *mole* sauce. Descriptions of these dishes have been given above (pp. 154, 158).[81]

Some make blood sausage (*rellena*) of the large intestine of the hog. It is washed well with lime and the juice of the *limón*, care being taken not to rupture the tissue. Blood, seasoned with *cebollina* (little onion), mint, and chili, is poured into the intestine and the latter securely tied. The gut then is boiled until the blood solidifies, a matter determined by pricking with a sharp stick. The small intestines are not eaten by humans but are fed the dogs.

Cracklings (*chicharrones*, ¢ikinmakaš), are a general favorite. As a modest luxury, they may be purchased in Papantla, or they are prepared in Tajín when a hog has been slaughtered. Occasionally, cracklings are made in small quantity, from beef or from the *papada* of the turkey.

The fat is peeled from the slaughtered hog, together with the skin. The two are separated and the fat cut in squares, the skin in strips. All are placed in a large copper vat with water and are cooked over a hot bonfire, being stirred constantly with a stick. During our stay, one lot did not turn out successfully—little lard, and the cracklings half-burned. It was concluded that "either a pregnant woman or someone who once had been bitten by a snake" must have approached the kettle.

Game.—Game is of scant importance in the diet, and represents little more than an occasional windfall. Game birds have been included above, with domestic fowl. Most other game is smoked and served in a stew. This applies specifically to venison, squirrel, rabbit, and armadillo. Sometimes rabbit is not smoked, but is boiled with garlic, chili, and tomato. Armadillo is said to be very acceptable served with *mole* sauce. The flesh of a feline (*onza*, *oncilla;* tánkiwi) is similarly prepared but is far from popular. Few care for the meat of the peccary. Some eat raccoon and opossum, but we neglected to ask in what form. The prairie dog is declared inedible by some; others claim that it is broiled and eaten. Skunk meat is considered exclusively medicinal.

Fish.—Small fish from the arroyos are smoked before they are made into a soup, with goosefoot, *cebollina*, coriander, and salt. Sometimes freshwater mussels are tossed into the broth.

From time to time, the Totonac buy a dried fish in Papantla, known as *sábalo* (tíškuˀ wikamakni), which usually is served with *mole* sauce. Another dried fish, purchased occasionally, is called *lisa.* It is washed and soaked in water, then broiled or fried. Sometimes it is served with *mole;* sometimes it is dipped in egg and fried, then placed in hot water, together with *cebollina*, coriander, and chili. The latter is either the local wild form, green or dry, or the chili known as *pico de pájaro.*

The roe of the same fish is sold in Papantla in November and December. It is washed, toasted, and ground on the metate. A raw egg is added and the paste fried as a cake. It may be eaten thus, or the cake converted into a soup or served with *mole.*

Fresh water shrimp (*camarón*) is made into stew. Corn dough, well ground and thinned with water, is dropped into boiling water and stirred. The shell and head are removed from the shrimps, which then are washed and added to the gruel, together with chili. The latter is the dry, wild form, ground and water added; it is allowed to stand until the seeds drop to the bottom. Then the liquid, containing the ground chili is poured into the stew; the seeds are not included. Some flavor shrimp stew with goosefoot.

Another kind of shrimp (*acamaya*), regarded as particularly tasty, is washed, sprinkled with salt, and placed on the clay griddle to toast.

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[81] Mention should be made of *zacahuile*, a special dish prepared in Papantla for All Souls' Day, as part of the food offering dedicated to the spirits of demised adults. Roberto Williams knows this dish from Tuxpan, Chicontepec, and from various parts of the Huasteca. In Tajín, it is made only by the wife of Lorenzo Xochigua, who happens to be from Papantla.

The local, cultivated chili is boiled and ground. Maize dough is mixed with it to form a paste about the consistency of gruel. Pork or chicken is added and the mixture placed in a clay vessel lined with banana leaves. Leaves also are used as a covering. The concoction is cooked for several hours in a hot oven.

CONDIMENTS AND SWEETS

The Totonac cooking is highly seasoned. Chili is used in many dishes and in quantity. Occasionally, through miscalculation, the dose of chili is too strong even for local taste. In that case, an emergency atole is prepared by crumbling a freshly made tortilla in a bit of water and the liquid is drunk to relieve the discomfort.

Chief dependence is upon the small, wild chili, which is available, green or dry, throughout the year,[82] and without which many meals are not complete. Unfortunately, we have few concrete data concerning chili consumption. However, Bernabé Xochigua collected about half a *fanega* (that is, 72 liters) of wild chili, of which he retained a quarter part for the use of his family of two adults and two half-grown children. Consequently, we may say that this household places its chili requirements at about 18 liters a year. The family of Tirso González, which comprises two adults and five girls, ranging from infancy to adolescence, consumes 1 *almud*, or about 12 liters of wild chili annually.

Here follow sauce recipes based on the small, wild chili:

Green chili. A few wild tomatoes are set to boil, and to to them is added green chili, with the stems removed. The tomato and chili are removed from the water and are ground; to the paste is added the liquid in which they were boiled. This sauce is eaten chiefly with tortillas.

Dry chili. Several wild tomatoes are boiled. The dry chili is toasted on the flat baking plate and then is ground in a dry bowl. With a spoon, the tomato is fished out of the hot water and is ground with the chili. The water is added to the paste, to form a sauce which likewise is served commonly with tortillas.

Next in importance is the cultivated chili, which is milder in flavor than is the wild form. It is used principally in *mole* sauce, but also is made into a sauce to be eaten with tortillas:

Green chili. The chili is roasted on the coals, is skinned, and is ground without removing the veins or the seeds. A clove of garlic and a bit of salt are added. No water is necessary, because the green chili contains a certain amount of "juice." This sauce is eaten on tortillas, but not with egg; "it looks very poorly when served with egg."

Dry chili. The seed is removed from the chili and the latter toasted on the baking plate. It is dropped into boiling water and allowed to stand a short while until it softens. It then is ground with a clove of garlic. The resulting paste may be fried, or the water in which the chili steeped is added. This sauce is eaten on tortilla or on eggs.

In addition to the local, cultivated chili, *mole* sauce requires *chile de color*, a variety which is not grown locally and which is available only through purchase in Papantla. Still another chili, known as *pico de pájaro*, is used occasionally. It does not grow well in Tajín, where there are only a few plants; it too is purchased, as needed.

Coriander also is prominent in Tajín cookery and is included generously in several dishes, especially soups and stews. In season, it is used green, but, at other times, the dry leaf and seed are acceptable. A substitute, known as *cilantro extranjero* (*Eryngium*, No. 276), is available throughout the year. Goosefoot (*epazote*, *Chenopodium*, No. 75) imparts a pungent flavor to a good many dishes, and shredded leaves (sometimes, the young stem) of *acoyo blanco* or *acoyo colorado* (*Piper*, Nos. 72, 184) often are added to beans. Mint (*hierbabuena*) is surprisingly popular with meat dishes; less frequently, the leaf of the aromatic avocado (No. 248) or of the *pimienta* (*Pimenta*, No. 30) is used as seasoning.

Condiments are by no means restricted to native plants, as witnessed by the coriander. Onions and garlic also are important in Tajín cookery, but are used with more restraint than is either chili or coriander. Fennel (*anís*, *Foeniculum*, No. 88) is another introduced plant which finds high favor. In addition, commercial Old World spices, such as cinnamon, cloves, and peppercorns, are purchased for special dishes.

Although the Totonac are the great producers of vanilla, they make virtually no use of it; occasionally, a few macerated pods are added to commercial alcohol, to form an intoxicating drink.

Salt is used extensively; it is purchased in Papantla or in the little stores in Tajín.

Sweets are plentiful today, thanks to the introduction of sugarcane. Both children and adults chew the fresh cane with relish, and a brown sugar produced locally from cane juice is used both in cooking and to sweeten coffee. White sugar is little used, but occasionally is purchased to make a preserve or to sweeten rice gruel or lemonade. Honey is a minor item in the diet nowadays. That of the Old World bee is considered the tastier and generally is diluted with water, so that "it will not be injurious." Honey of the native bee occasionally is eaten with *pan de agua* (a bread said to be made of flour, salt, and water, without egg); generally, it is used only medicinally.

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[82] Pin is the generic term for chili. The local wild form is known as the sta ʔka ʔpin, when green; as sa·wɔ̀wapin, when dry. Similarly, the cultivated chili is called kalanqapín (thick chili) when green, and tilípin, when dry.

OILS AND FATS

The Totonac are blessed with a wide variety of vegetable oils, although none is available in great quantity. Several evidently are native and presumably were used in prewhite days.

There are various kinds of avocados, the fruit of which has a high oil content; generally it is eaten with tortillas, much as we eat butter on bread, but accompanied by the ubiquitous chili sauce. Although there is an abundance of avocados, they are not eaten with great enthusiasm; it is believed that overindulgence may be fatal.

Other plants produce their oil in the form of seeds, which are treated according to an established pattern: they are toasted on the baking plate, then ground to release the oil. Seeds of one of the local squashes (*pipián*), of the physic nut (*Jatropha*, No. 192), and of the local, perennial cotton (Nos. 8, 9) all are prepared thus, before they are added to a variety of dishes. Diáz del Castillo (1:191) remarks that the Totonac of "Cempoala" eat cotton seeds, and it seems probable that this oil was of greater importance formerly than it is today. Presumably, it has been largely replaced by sesame and hog lard.

Infrequently, the nut of the *coyol* palm (probably *Acrocomia*, No. 362) is substituted for squash seed or sesame, but the use of palm oil is negligible. However, *coyol* nuts are a great favorite with the children, who crack the shells between stones and nibble the contents with evident relish.

It is possible that in former times the seed of the *zapote cabello* (*Licania*, No. 90) also provided a vegetable oil. The seeds were broken, boiled, dried in the sun, and "ground as if they were *pipián*." The latter statement suggests an oily product. Since the seed of a tree of the same genus produces oil in such quantity that it is exploited commercially, possibly the *zapote cabello* shares this property on a smaller scale (Standley, p. 343; Martínez, 1928, pp. 64–65).

The peanut is grown occasionally, as a garden curiosity (No. 313), but cannot be considered a local food product—either now or in ancient times. Yet, despite the lack of this important American cultivate, it would appear that in aboriginal days the Totonac were pretty well provided with vegetable oils.

In historic times, the sesame has become a significant source of oil; its seeds are treated precisely as are those of most native plants. Moreover, the castor plant—introduced, but naturalized—is exploited occasionally for its oil. Two kinds of castor (Nos. 249, 250) are distinguished, a white and a red; it is the seed of the latter which is used in cooking. We asked concerning the taste and were told, "It has the flavor of oil."

Although sesame is important, it has by no means replaced the native vegetable oils. On the score of fats, the chief Old World contribution undoubtedly is hog lard. This is highly prized and is used extensively, at least by the families who can afford it.

VEGETABLES AND FRUITS

Vegetables.—In our sense of the word, vegetables are little used in Tajín. One of the most important is the wild tomato, which is both plentiful and popular during much of the year; chili has been treated above, under condiments.

Several wild plants are eaten as greens. Two kinds of *quelite* (*Amaranthus*, Nos. 104, 105) are distinguished, both edible in December and January. The boiled leaf is served with oil of sesame, squash seed, or physic nut, with coriander, chili, and *cebollina* added for flavor. One housewife prefers to dip the leaves in egg and fry them; another adds the boiled leaves to beans. The leaf of *quitacalzón* (*Phytolacca*, No. 29) is boiled, then chopped and fried with egg, or added to a pot of beans.

Perhaps the most popular wild green is the young leaf of *yerba mora* (*Solanum*, No. 6), which is boiled and drained, then boiled anew in fresh water, to remove a bitter element; usually the cooked leaf is combined with egg and fried. A composite (*Sonchus*, No. 93) is treated similarly; "the older people still eat this plant, but the young ones do not care for it." Another composite (*Porophyllum*, No. 5) is eaten entire, raw, or is combined with chili sauce and tortillas, to make a variant of *enchiladas*. Once in a while, the young leaf of *lelekes* (*Leucaena*, No. 38) is nibbled raw. It is said that in Talaxca, the leaf of the Jalapa purge (*Ipomaea*, No. 286) is added to beans, together with half a lime; it is not clear whether the leaf serves as a green or only as seasoning. This dish seems to be unknown in Tajín, except among families with strong Talaxca ties.

Buds and flowers of the (wild? semicultivated?) yucca (*flor de pito*, No. 230) are eaten when available. The petals are stripped from the blossoms and are boiled; they are drained two or three times and reboiled in fresh water. They may be added to *mole* sauce or to beans; they may be eaten with *púlacles* (p. 154); or they may be combined with the dry paste of sesame seed, from which the oil has been extracted. This latter mixture is shaped into small balls, which are made into a soup, flavored with wild tomato, coriander, and *cebollina;* sometimes the balls, combined with shrimp and goosefoot, are served as a soup.

Few cultivated plants are prepared as vegetables. Although popular in many parts of Mexico, squash blossoms are not utilized in Tajín. The leaf and flower of the *chipila* (*Crotalaria*, No. 91) are boiled, seasoned with a bit of goosefoot, and eaten. As will be seen later, this particular dish may be of important nutritive value (pp. 169–170). The blossoms of a cultivated tree, also of the legume family[83] (*pichoco*, *Erythrina*, No. 284), are made into a dish not unlike string beans in appearance. The "head and vein" are removed, and the remaining parts are boiled, being drained one to three times, and reboiled, to remove the bitter taste. The cooked blossom is served unadorned; it is mixed with egg and fried; or it is added to beans, together with a bit of goosefoot for seasoning.

Shelled green beans sometimes are eaten (p. 157), but never the pod. Green peas, as a vegetable, have been mentioned previously (p. 158). Tronchuda cabbage (No. 285) is far from popular, but once in a while the leaf is eaten green; sometimes it is boiled and served with sesame oil; or it is fried with egg. During our stay, neighboring Totonac youngsters sampled our food with great relish, but drew the line at both beets and carrots, with which they were unfamiliar.

Fruits.—Fruits, cultivated and wild, native and introduced, are both plentiful and varied but, on the whole, little exploited. The Totonac have no prejudice against fruits, merely a supreme disinterest. A *zapote chico* bears heavily but nobody bothers to harvest. If inquiry is made, the reply is, "Oh, we leave the fruit for the youngsters." Actually, Totonac diet could be greatly expanded and improved, simply through more extensive utilization of fruit products at hand.

Native fruits include three cultivated hog plums (*Spondias*, Nos. 290, 291, 292). Two bear in June, the third, in the fall. The fruit generally is eaten raw but sometimes is boiled with brown sugar. That of a wild relative (*jobo*, No. 186) is collected occasionally.

The cultivated papaya is utilized on a small scale. The green fruit is peeled, soaked in a lime solution, then cooked with brown sugar; ripe fruit is eaten raw. Some affirm that the small fruit of the wild form (No. 172) is boiled with brown or white sugar to make a preserve; others are dubious of its utility.

The pineapple is little grown and little used, although vinegar is prepared by allowing the rind to ferment in water for about a week.

Several trees of the sapote family produce edible fruit. These include the cultivated *zapote mamey* (*Calocarpum*, No. 350), the semicultivated *zapote mante* (*Pouteria*, No. 220), and the wild *zapote chico* (*Achras*, No. 191). The unidentified *zapote de calentura* (No. 198) may also be of the same family; it is not cultivated, but from time to time its fruits are collected.

Several other fruit trees are called sapotes, although they belong to distinct families. These include the *zapote prieto* (*Diospyros*, No. 125) and the *zapote domingo* (*Mammea*, No. 127), both cultivated. Once in a while, the fruit of the semicultivated *zapote cabello* (*Licania*, No. 90) is gathered; it may be sold in Papantla, where it is popular for the offering to the dead on All Souls' Day.

Of the above fruits, only the hog plums, the papaya, the *zapote chico*, and the *zapote cabello* are eaten with any frequency. In addition, there is a long list of fruits below, which are by no means a regular part of Totonac diet, but which are consumed occasionally as tidbits. Sometimes adults indulge, but children exhibit greater interest.

a. The fruits of several legumes are utilized—either the entire pod, the seed, or the pulp surrounding the latter. Young pods of the semicultivated *lelekes* (*Leucaena*, No.

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[83] One woman had heard that the blossom of the *muite* (No. 123) was edible. This plant is of relatively recent introduction and, as far as we know, is not eaten in Tajín.

196*a*) are nibbled entire, as are those of the wild form (No. 38). When mature, only the pith and the seeds are eaten, uncooked. Increased consumption probably would benefit Totonac diet materially (pp. 169–170).

Children suck the white pulp which surrounds the seed of both the cultivated *chalahuite* (*Inga*, No. 195) and the wild form (No. 181). Occasionally the skin is removed and the seed boiled with salt, to serve as a confection. Youngsters also are fond of the pith within the pod of a wild *Pithecellobium* (No. 203).

b. The cultivated *gurupillo* (*Couepia*, No. 339) produces a fruit which is eaten raw.

c. Upon rare occasions, children eat the fruit of the *chote* (*Parmentiera*, No. 10), which is considered more suitable for stock. This is in contrast to practice elsewhere, for in markets near Mexico City the cooked fruit occasionally is offered for sale by vendors who claim to bring it from the neighboring State of Morelos.

d. The fruit of a wild tree known as *puán* (*Muntingia*, No. 37) sometimes is collected, to be eaten by the family or to be sold on small scale in Papantla.

e. A *monte alto* fig (*higo*, *Ficus*, No. 221) produces a small fruit so little prized that informants are divided in opinion as to whether or not it is edible.

f. The *ojite* (*Brosimum*, No. 98) is another *monte alto* tree. Its small, round fruits are collected, shelled, and boiled with salt; or they are stewed with brown or white sugar. Local use is very limited.

g. Four small trees or shrubs are called *capulín* (*Ardisia*, No. 21; *Eugenia*, Nos. 41, 85; *Parathesis*, No. 327); all produce fruits which are collected sporadically.

h. The *guayabillo* (*Calpytranthes*, No. 208) is a *monte alto* tree; its relative, the *guayabo* (*Psidium*, No. 326), is at most semicultivated. Both yield edible fruit; that of the latter is eaten raw or stewed.

i. The annonas are not prominent locally. We collected one wild form (*anona de mono*, *Annona*, No. 57) whose fruit is edible, "but it is small."

j. The wild *Guazuma* (No. 218) is little esteemed, but "some eat the fruit; it is sweet when ripe."

k. *Manzanilla* (*Malvaviscus*, No. 18) is a wild shrub on whose fruit children sometimes nibble.

l. *Guapilla* (*Bromelia*, No. 283) produces a fruit which may be eaten raw or prepared as a fermented beverage.

m. A number of vines bear edible fruit; those enumerated below do not include cultivated cucurbits, since they have been mentioned previously. The *cahuayote* (*Gonolobus*, No. 124) sometimes is planted. Its young fruit is peeled and boiled with white or brown sugar; or it is peeled, squeezed, and the juice poured over brown sugar sirup. Seed of the *pusulucuate* (possibly *Apodanthera*, No. 106) may be eaten "like a pomegranate."

Other vines producing edible fruit are: *chápiso* (No. 156); *tomate de guajolote* and *granada del monte* (both *Passiflora*, Nos. 51, 162); *bejuco de parra* (*Vitis*, No. 187); *nigua del puerco* (*Paullinia*, No. 52); and probably another vine related to the last (cf. Nos. 207, 246).

n. Two unidentified wild plants credited with edible fruits are the *pitaya de ardilla* (No. 163) and the *chataya* No. 315). The latter sometimes is sold in Papantla.

Introduced fruits are relatively limited in number. The mango ripens in summer and is eaten raw; it is not sufficiently plentiful to be sold. Citrus fruits are quite common, particularly the orange and the *lima*. Both are eaten raw; the juice of the bitter orange or of the lime (*limón*) is squeezed into water to form a sort of lemonade, which is sweetened with white sugar or with honey from the Old World bee.

Of all fruits, native or introduced, the banana is the only one of major importance in Totonac diet. Its use has been described above, in the discussion of starchy foods. Vinegar is made from both the *plátano Roatán* and the *plátano durazno*. The fruit is placed in a clay pot, without the addition of either water or sugar. A cloth is tied tightly over the mouth of the vessel, and as the banana disintegrates, it produces a liquid which, at the end of a couple of weeks, is strained and used as vinegar. The latter also is made from the rind of the pineapple, as noted above. Vinegar serves occasionally to cure chilis or in making sausage; it also is considered medicinal.

BEVERAGES

Nonalcoholic beverages.—Coffee and atole are the chief nonalcoholic drinks of the Totonac. When there are funds for such a luxury, commercial coffee is purchased in Papantla; but more frequently, a maize substitute, optimistically called coffee, is served. It is prepared by toasting dry kernels of maize on the baking plate until they are well carbonized; the burned grains then are ground and used in lieu of commercial coffee. When a Totonac speaks of coffee, generally he refers to this innocuous substitute; commercial coffee, as a rule, is bought only for special occasions. And even at large and important fiestas, the maize substitute is served. Both legitimate and illegitimate coffee are heavily sweetened with brown sugar.

Probably chocolate was considerably more important in former times than it is today. Díaz del Castillo (1:174) notes that among the Totonac of "Cempoala" and "Quiahuixtlan," cacao is "the best thing that they drink." Cacao formerly was grown in the Papantla zone (Suma, No. 449), but as far as we know, not a plant survives today.

At present, chocolate is used almost exclusively for feasts. The bean is bought in Papantla and is ground on the metate, together with a couple of hard-boiled eggs, cinnamon, and toasted bread. It then is shaped into small round cakes. Chocolate—almost invariably made with water, not with milk—is beaten with a special instrument, which is a local product of considerable ingenuity (pp. 195–196). Often, only the froth is served, dropped on top of a cup of atole. Sometimes egg is added, so that the foam will be more abundant.

The local equivalent of lemonade, is made with the juice of the bitter orange or of the lime (p. 163).

If one happens to be in *monte alto* and is thirsty, but there is no water at hand, he cuts the thick stem of the *bejuco de parra* (No. 187) and sucks the liquid it contains. A bromelia (No. 301) also provides water in an emergency. During hot weather, the *caña de puerco* (No. 158), which grows wild along the arroyos, is cut and chewed; it is said to be "refreshing."

Alcoholic beverages.—The Totonac, especially the men and the elderly women, are enthusiastic imbibers. Today, the main reliance is upon commercial drinks. Beer is popular and generally is available in the small stores in Tajín; for large celebrations, such as a wedding, it is bought in Papantla, by the carton.

At certain festivals, it is socially correct to offer *refino*, *jerez*, and *anisado* to the guests. The first is distilled cane alcohol, apparently of poor quality, purchased either locally or in Papantla. At feasts it is served plain to the men. *Jerez*, which is sherry only by name and by courtesy, is a sweet red wine; *anisado*, a liquor with anise flavor. Both are purchased for feminine consumption and circulate principally in the kitchen, among the women who assist the hostess in preparing food.

With *refino* as a base, several drinks are made locally:

Seven or eight dry vanilla pods are macerated and *refino* poured over them. The resulting beverage is not considered medicinal; it represents, incidentally, the only local use of vanilla.

Honey of the wild bee is mixed with *refino* to make a drink known as *picadito;* "some like more alcohol than honey." This mixture is considered a cure for stomach ailments.

Various kinds of "punches" (pončì [*sic*]) likewise are regarded as medicinal and are taken principally to treat loss of appetite or a stomach upset; "but some people, for sheer pleasure, drink punch early in the morning."

One such "punch" is made by breaking an egg into warm water and by adding either *refino* or what passes for sherry. The mixture is beaten until it foams, and the froth is drunk.

Another "punch" is made from ginger (No. 32). The tuberous rhizome is pounded, and then boiled with white or brown sugar; *refino* and two or three raw eggs are added; and the thick liquid is drunk.

Similarly, a drink with rue (No. 317) flavor is prepared. A bunch of small sprays is boiled, and alcohol and raw eggs are added. This is taken early in the morning, before breakfast.

Not all alcoholic drinks are commercial, and a number of fermented beverages are made locally, or at least were current in former times. These are known as wines (*vinos*) or *pulques;* neither appears to have a Totonac name.

Pulque de zarza is a mildly alcoholic beverage, now little used, made from sarsaparilla (No. 252). The root is cut, roasted on the coals, then chopped and placed in a vessel with water. One informant adds brown sugar at the start; another says that either white or brown sugar is added following fermentation. By the odor, one knows when the drink is ready for consumption. It is "very refreshing" and sometimes is taken to the fields for the enjoyment of men working in the milpa. Exposed overnight to the dew, it is drunk in large quantity as a cure for gonorrhea.[84]

Formerly, fermented drinks were prepared from *capulín* (No. 21), from the ripe fruit of the *guapilla* (No. 283), from one of the annonas (possibly No. 57), and from pineapple. For the latter, rind and flesh were shredded, placed in water, and allowed to ferment. It is quite possible that the simple fermented beverages listed above may be ancient among the Totonac; at least, they are based on plants native to the area.

The same does not hold for *pulque de caña*, the fermented drink most in vogue today. Sugarcane is crushed in the mill and the juice collected in a clay pot or a large copper vessel. If allowed to stand, it becomes sour, "like vinegar"; so that it may ferment properly, an additional substance, known as the *pie* (lees) is added.

This may be prepared from several lengths cut from fresh stalks of uncrushed sugarcane. They are roasted, allowed to cool, and a bit of cane juice poured over them. When this ferments, it forms a sort of vinegar, which is the *pie*. It is added in small quantities, for a day and a night, to the main lot of cane juice, as a consequence of which the latter ferments but does not sour.

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[84] A sixteenth-century report from Maxtlatlán notes that sarsaparilla is used to treat venereal disease (*bubas*) and other ailments (Paso y Troncoso 5: 119).

Sometimes the *pie* is prepared from sections of a vine known as ču·čoks (No. 202). The stem is cut in short lengths which are dropped into the cane juice. Our informant is uncertain whether or not the stem is first roasted. In lieu of the above preparations, a bit of distilled alcohol (*refino*) may be added to the juice, by way of *pie*. The vessel, with a cloth tied tightly over its mouth, is allowed to stand 24 hours, following which the *pulque* is ready. It is a violent green and is considered highly intoxicating.

No liquor is made locally from maize, either from the grain or the stalk. However, a fermented drink based on the juice of the maize stalk apparently was widespread in Mexico in former times. It is barely possible that the *pulque de caña*, now so popular in Tajín, represents a survival, with sugarcane substituted for the cornstalk.

Informants say that years ago, *aguardiente de caña* was manufactured in Tajín. The name implies distillation, but we were unable to obtain details.

HOT AND COLD FOODS

The familiar division of foods into hot and cold categories is found among the Totonac, as it is in many parts of Mexico.[85] We made no particular effort to list foods according to this classification, and the following data were noted more or less incidentally:

Hot foods: onion, chili, ripe squash (*calabaza*), aromatic avocado, nut of the *coyol* palm, sugarcane, orange, papaya, mango, annona, banana, honey of both native and introduced bee, alcoholic beverages, and ice. Cold foods: pork, nonaromatic avocado, manioc, *jícama*, *lima*, hog plum, watermelon, melon, papaya, and guava. Informants disagree concerning the lime and the tomato.

In Tajín, no one seems particularly preoccupied with this aspect of foods, but several characteristic statements follow:

> The honey of the wild bee is hot; if one takes a glass, he may run a fever.
>
> Honey [of the introduced bee] is very hot and is injurious if eaten alone; mixed with water, it does no harm.
>
> Cooked, dry squash [*calabaza*] is very hot. One should not eat preserve or atole made of it and then drink cold water. It affects the kidneys.
>
> Avocado [which is cold] does no harm if eaten with chili, salt, or tortilla. But if taken alone, it causes diarrhea. However, the aromatic avocado is very hot and does no harm.

SAMPLE MENUS

Below are a few observations concerning meals eaten by the head of the family in several households. The latter are numbered. Families 21 and 28 are of better than average means; family 35 is impoverished and probably undernourished; the others perhaps may be considered representative.

The data are by no means as precise as they should be, nor are they as extensive. However, they give a fair idea of random sampling in a number of homes. In no case is a feast involved, and in no case were we expected as guests. Almost without exception, the "coffee" is the local charred maize substitute (p. 163). Since most of our observations were made during cool weather, atole is scarcely mentioned; it enjoys greatest popularity when the temperature soars.

Breakfast

No. 20. 6 plantains, each cut in 4 slices and fried; coffee.

No. 20. *Gorditas* (p. 154) (not counted) with chili sauce; coffee.

No. 20. 10 *enchiladas;* coffee.

No. 21. 18 tortillas; 2 eggs; 2 cups coffee.

No. 28. 12 plain tortillas; 6 *enchiladas* (in this case, tortillas, with chili sauce, sprinkled with cheese); plate of beans; 2 cups coffee.

No. 35. Tortillas (not counted) with chili sauce; coffee.

No. 43. Tortillas (not counted) with chili sauce; 1 egg; coffee.

No. 43. Tortillas (not counted) with chili sauce; chicken broth (the latter a gift of a neighbor).

Dinner

No. 16. 4 *enchiladas* (in this case, tortillas fried with wild chili and tomato), served with small amount of cracklings; less than 1 cup fermented-atole.

No. 16. 6 tortillas; 1 plate of beans; 1 cup fermented atole.

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[85] The general distribution and the strength of this notion in exclusively mestizo areas suggest that it is of European introduction. In passing, it may be noted that, in 1581, a Spanish official, writing a report on a Totonac pueblo of the Sierra is perfectly cognizant of this classification, for he remarks that a certain plant, "*cacaguasuchil,*" is added to chocolate, "so that the coldness of the cacao may not be injurious" (Relación de Hueytlalpan).

The concept of hot and cold foods evidently extends to South America. In northern Peru, Gillin (p. 54) encountered this division of foods, but regards it as "something embedded in the matrix of curative magic."

No. 16. 10–11 tortillas; 1 plate of *mole* (4 small pieces of pork in chili sauce); 1 cup fermented atole.

No. 20. 7–8 tortillas; 1 plate beans; coffee.

No. 20. 8 tortillas; 1 dish spaghetti; coffee.

No. 20. 8 tortillas; 1 egg, served with wild tomatoes; coffee.

No. 20. 9 tortillas; 1 plate fried beans with chili sauce; coffee.

No. 21. 18 tortillas; 1 serving of meat (kind not recorded); 1 cup broth; 1 cup atole; coffee.

No. 28. 8 tortillas with chili sauce; 1 plate spaghetti, with small piece of chicken; 1 cup coffee.

No. 35. Plantains (fried? roasted?); coffee.

No. 43. Tortillas (not counted); 1 plate beans; coffee.

No. 43. Tortillas (not counted); 2 eggs with chili sauce; coffee.

No. 147. 12 tortillas; 1 scrambled egg, with chili sauce; 1 cup coffee.

Supper

No. 20. *Bocoles* (p. 154) (not counted), fried in lard and salted; chili sauce; coffee.

No. 20. 10 *bocoles;* coffee.

No. 20. 1 plate beans; coffee.

No. 21. 10–12 tortillas; *enchiladas* (not counted), served with young squash, fried; 1 helping rice; coffee.

No. 35. 1 plate beans; coffee.

No. 43. Tortillas (not counted); 1 plate beans; coffee.

No. 43. 1 plate beans; chili sauce; coffee.

A man frequently carries his lunch—for example, if he is working in a milpa far from the house and does not come home at noon; if he lives far from the *fundo legal*, and presents himself there 1 day a week for communal labor; or if he goes on any sort of hunting or fishing excursion. Most of these lunches consist chiefly of *enchiladas*, which are tortillas, brushed with chili sauce, and doubled so that the flavored surface is on the inside. Here follow some observations concerning lunches:

No. 2. (2 meals, for 3 persons.) 40 tortillas; "many" small cakes made of maize dough, green peas, and dried fish; 2 small tins of *chile serrano*, purchased at a store along the road; 1 bottle coffee.

No. 3. 9 *enchiladas;* a tenth remained, which the individual finally ate, simply to be rid of it; bottle coffee.

No. 29. *Enchiladas* (not counted); 1 hard boiled egg; bottle coffee.

No. 36. 15 *enchiladas.*

No. 131. "Stack" of *enchiladas;* "several" *bollitos* (p. 153).

No. 147. 10 *enchiladas;* small amount (ca. 125 gm.) jerked beef; chilis.

Not recorded. 10–12 *enchiladas;* chilis; 2 hard-boiled eggs.

Not recorded. 12 *enchiladas.*

Children who live far from the school also carry their lunches. Most appear to consist of 10 to 12 *enchiladas.* Within the fold of the tortilla, in addition to chili sauce, there may be a bean filling, less frequently, one of boiled egg or meat.

DIET

CARBOHYDRATES

Maize is the mainstay of the Totonac cuisine and is, at the same time, an important source of starch. At many meals, tortillas are the main dish—sometimes, the only dish of solid food. One of our friends claims to eat 18 to 20 tortillas in the morning; a similar number at noon; and in the evening, "very few," only 10 to 12. His estimates are confirmed by his wife. Moreover, the individual is the head of a family (No. 21) whose tortillas generally are accompanied by other foods, not infrequently by eggs or meat. However, most Totonac consume tortillas in greater moderation (pp. 165–166).

For 30 families, we have information concerning the amount of maize prepared as *nixtamal.* Every housewife knows how many *cuartillos* (3 liters) of maize she steeps with lime and how many times a week this operation is performed. The figures give a rough measure of the maize consumed in the form of tortillas, several kinds of corn gruel, and a number of other maize dishes. They do not, however, include a number of maize foods which are not based on *nixtamal*—for example, the popular fermented gruel of purple corn. Perhaps this error is offset by the fact that young chicks are fed maize paste, prepared from *nixtamal*, and that dogs and cats eat tortillas. It was quite impossible to disentangle this animal consumption from general household requirements.

Obviously, the figures are only an approximation—not only for the reasons given above, but also because local measures are somewhat elastic. We bought five lots of white corn in Tajín, each duly measured and pronounced to be a *cuartillo* (3 liters). Later, the volume was checked with a standard liter measure in Mexico City. One lot was complete; two fell only slightly short; one lacked almost a full liter; and the fifth lot, purchased when the corn was relatively fresh, had shrunk so in drying that only a bit over a liter represented the original purchase, supposedly of three. Accordingly, there is considerable latitude in the original measure of a *cuartillo.*

Figures given by housewives for *nixtamal* consumption were converted into the maize requirements for the family over a period of 6 months (harvest to harvest). Later, they were converted into the daily maize consumption per individual.[86] Estimates range from 0.44 to 1.10 liters of maize per day for each adult, with an average of 0.732. One family (No. 35) has been excluded because its consumption was so far below normal that it would have warped the average unduly; its daily maize requirement is only 0.27 liters per individual. However, in this particular household, the banana consumption is said to be unusually high, and the head of the family, probably untruthfully (for he is notorious as a poor provider), claims that bread is eaten with great frequency.

In order to have basis for comparison with other areas, and with Mexico as a whole, our five samples of white corn have been weighed. The standard liter measure, not the variable one used in Tajín, weighs from 750 to 790 gm. per liter, with an average at 770. Accordingly, it may be said that maize consumption in Tajín ranges approximately from 339 to 847 gm. a day, with the average at 564 gm. for each adult.

This is somewhat lower than the figure given for the Maya (1.31 pounds: 640 gm.) (Steggerda, p. 127). Both Maya and Totonac estimates include maize fed in the form of tortillas to cats and dogs; and the Totonac figure includes also the small amount of maize dough given to small chicks. As noted above, in Tajín these probably are more than compensated for by maize dishes which are not based on *nixtamal*.

For Mexico at large, the average maize consumption is said to be 0.28 kg. (280 gm.) daily, and many "people of low economic status consume as much as 700 gm. of corn in this fashion" (Harris, p. 974).[87] The Totonac average, based on a relatively small number of cases, is about double that for Mexico as a whole. This probably is as it should be, since maize is the chief food. As a matter of fact, the general average probably is somewhat deceptive. In many parts of Mexico, beans are extremely important; in others, corn is the mainstay. Moreover, the average must have been lowered appreciably by the inclusion of urban areas, where bread shares the honors with tortillas. It would be more meaningful if we could have separate figures for rural and urban zones.

In addition to maize, many other local foods provide the Totonac with starch. Of these, the banana and plantain are most important, followed by cucurbits and a series of starchy roots, and tubers (pp. 155–157). Moreover, crackers, spaghetti, and other paste preparations are popular, and bread is an occasional modest luxury. On the whole, the Totonac are abundantly supplied with starches.

Sugar likewise is plentiful. The present-day role of honey in the diet is very minor, but cane is one of the principal crops, and a highly palatable brown sugar is prepared from its juice. In all the households with which we are acquainted, this brown sugar is used generously. Five families were able to give approximate estimates of their annual consumption of brown sugar:

Family No.:	Number of persons in family [1]	Annual consumption in terms of *mancuernas*	
		Total	Per individual
3	4. 5	100	22. 2
21	13	276	21. 2
23	5	130	26. 0
27	9	352	39. 1
42	4	104	26. 0

[1] Children of less than 1 year have been disregarded; those from 1 to 4 years have been counted as half; and children of 5 years and more are classed with adults.

Even if the estimates were accurate, it would be difficult to express the *mancuerna* in terms of weight. It is said that there are two sizes, one weighing slightly less than a kilogram, and one weighing approximately 1.5 kg.; one selected at random weighs 1.1 kg. If we take this arbitrary figure, it may be said that, on the basis of data from only five families, the annual consumption of brown sugar per person ranges from about 23 to 43 kg. All but one of the cases cluster about the lower figure, and it seems likely that family No. 27 overestimated its consumption. Incidentally, the lowest estimate is that given by family No. 21, which happens to be one of the more prosperous, better-fed households.

This lowest figure (23 kg.) is equivalent to about 51 pounds. The annual consumption of refined sugar in the United States—calculated for an "adequate diet at moderate cost" and for a "liberal diet"—is 60 pounds (Cummings, p. 200). Accordingly, it would appear that the Totonac are moderately well provided with sugar—since the calculations above are based on the smaller *mancuerna;* since brown sugar occasionally is supplemented by white; since fresh cane is chewed with enthusiasm; and since honey is eaten from time to time.

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[86] In this calculation, children of less than 1 year of age have been disregarded; those from 1 to 4 years have been counted as half; and children of 5 years and more have been classed with adults.

[87] We question the coupling of "low economic" status with high maize consumption. The Maya, and perhaps the Totonac, are among the heaviest maize consumers in Mexico, yet their general economic condition is far better than is that of most other Indians and of a good many mestizos.

PROTEINS

Proteins come principally from eggs and legumes, with fowl, meat, fish, and assorted game constituting a secondary source; corn, of course, provides a certain amount daily.

Most families in Tajín keep chickens, turkeys, or both, and eggs are available throughout the year, although relative abundance varies. Nevertheless, they provide the only constant animal protein in local diet.

In many parts of Mexico, beans are ubiquitous, but in Tajín, they are somewhat of a luxury, although served more frequently than is meat. We have no concrete figures, but as a guess, beans are eaten, at most, on an average of 2 days a week in the majority of households. In one case, a housewife lamented that it was "a long time" since she had tasted either beans or meat.

Meat of any description falls definitely among luxury foods. Little Maclovio Calderón, aged 3, was asked to name his favorite food; unhesitatingly, he replied, "*carne.*" In most families, meat certainly is not eaten more than once a week, and for many it is exclusively a feast dish.

Fowl is the meat most commonly available, and it is not unusual for the family to kill a chicken for a minor celebration. Next in importance is pork. Butchering is relatively frequent when the fields are being cleared and planted, for then it is a matter of prestige for each household to serve the workers a bountiful meal, with *mole*—either of pork or fowl.[88] Beef is of scant importance and the little that is eaten is purchased in Papantla; when pork is not available locally, it, too, may be bought in town. Of late, in 1949, the consumption of both pork and beef has been reduced to negligible terms, indirectly the result of efforts to eradicate the hoof and mouth disease. Popular opinion is that sterility results from eating the flesh of animals which have been injected against the malady. As a consequence, the Totonac of the Papantla hinterland have declared an informal boycott on such meat, and butchering in Papantla appears to have been reduced materially.

Cheese is eaten occasionally, and the more prosperous families purchase in small quantity in Papantla, from time to time. One household, better stocked than most with city merchandise, buys 250 or 500 gm. about twice a month, for a family of two adults and three small children. All regard cheese as a luxury.

Presumably, the protein intake is augmented considerably by other foods, particularly by maize (Anderson et al., p. 1129), which is eaten daily, and by sesame and squash seed,[89] utilized less frequently.

On the whole, it seems almost certain that Totonac diet is deficient in high quality protein. Although a number of foods are mentioned above, except for eggs and maize, none is available constantly or in quantity. Beans are more plentiful than meat, but are not raised successfully in Tajín; both meat and cheese are luxury items; and the supply of fish and game is extremely limited. Other presumed sources, such as sesame and squash seed, probably are not eaten in sufficient quantity to be very significant.

If a high-yield protein crop could be adapted for local planting, local diet might be benefited materially. We have noted above that soybeans are being tried at present. Another possibility is larger-scale utilization of the pigeon pea (*Cajanus*, No. 95), which is a food of "considerable potentiality" (Munsell et al., p. 7).[90]

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[88] Even at fiestas, the servings of meat are frugal. For one feast, we are told that 6.5 kg. of pork served 60 persons—about 108 gm. the plate. One informant calculates that 20 kg. of pork are sufficient for two meals for 60 persons. In short, 120 servings are extracted from the 20 kg., or about 166 gm. per plate.

At fiestas, nothing is wasted. Often food left on the plate is returned to the kettles, to be served anew, and late-comers may find odd bits of tortilla in their *mole.* However, upon occasion, we have seen food scraped from the plates with half-consumed tortillas, and fed to the dogs.

[89] Assays of sesame and of the seed of two samples of *Cucurbita pepo* L. have been published (Cravioto et al., table 3); we have seen no report concerning *C. argyrosperma* Hort., the cucurbit seed used in Tajín.

Moreover, the tested sesame is from Guerrero and the squash from Morelos. Without specific analyses of Tajín specimens, it is difficult to say to what extent their nutritive value resembles or differs from that of similar products grown elsewhere.

[90] Both immature and presumably dried seeds are fairly high in nitrogen (Munsell et al., p. 7, table 2; Cravioto and Miranda, No. 211).

OILS AND FATS

On the score of oils and fats, the Totonac are pretty well provided. Avocados are abundant, during season, but are eaten with restraint (p. 161). Other oil-producing plants include the seed of the squash (*Cucurbita argyrosperma* Hort., pp. 136–137, 161), of the physic nut (*Jatropha*, No. 192), and of the perennial cotton (*Gossypium*, Nos. 8, 9). Oil of the *coyol palm* (probably *Acrocomia*, No. 362) is used so rarely as to be negligible. Introduced plants—principally the sesame, but to a lesser degree, the castor bean (*Ricinus*, No. 249)—likewise are exploited for kitchen oils. Moreover, a good many families are sufficiently prosperous, at least following the sale of their vanilla and brown sugar, to be in a position to purchase hog lard.

MINERALS AND VITAMINS

On the basis of published analyses of foods from several parts of Mexico and from Honduras, we may guess, in a general way, some of the minerals and vitamins supplied by Totonac diet. The guesses are no more than that, because, with two exceptions, analyses have not been made of specific food plants from Tajín. Even when a published assay refers to the same species as are found locally, there is little assurance that the same plant, grown in coastal Veracruz, has the same food value that it has when grown elsewhere. Moreover, relatively few analyzed plants are of the species found in Tajín, and it is extremely hazardous to assume that several plants share the same qualities simply because they belong to the same genus.[91]

There is little doubt that the Totonac are abundantly provided with calcium. Their drinking water apparently is heavily impregnated with lime, and they are further supplied through the tortilla[92] and other maize dishes based on *nixtamal*.[93] In short, despite the virtual want of dairy products, calcium intake appears to be more than sufficient.

Phosphorus is provided by the tortilla, beans, and dry chili; by sesame and squash seed, whose oil is used frequently, if on small scale; and among little-used foods, by the pigeon pea and *Leucaena*.[94] The monotonous function of goosefoot (*Chenopodium*, No. 75) as seasoning may be all to the good, for this plant appears to be useful for calcium and phosphorus metabolism (Cravioto et al., p. 325).

The Totonac may be deficient in iron. Egg is rich in this mineral; the tortilla apparently provides a small amount, as do beans and dry chili; occasional minor sources are pigeon pea, *Crotalaria*, and *Leucaena*.[95] For an increase in iron intake, the *Crotalaria* perhaps offers the best possibilities. It appears likely that coriander, a favorite Totonac condiment, contains considerable manganese (Cravioto et al., p. 326).

Of vitamins, carotene (pro-vitamin A) undoubtedly is derived from chili, the wild tomato,[96] and coriander. It is possible that local chenopodium and amaranths may also contain some carotene.[97] A potential local source of apparent importance is *Crotalaria*, now little exploited. Although leaves of the sweetpotato and manioc both[98] may have appreciable amounts of carotene, neither is used as a food in Tajín.

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[91] As a matter of fact, not only does nutritive value vary from one species to another, but even the same species, grown in different places, may be quite distinct in assay value. For example, two samples of *chayote*, listed as the same species, come respectively from Morelos and Veracruz; but the latter proves to contain almost four times as much calcium as does the former (Cravioto et al., table 1). A more extreme case is provided by the hog plum. Two specimens, declared to be the same species, come, one from Guerrero, the other from the Federal District (purchased, not grown, there). The former contains 15 times as much iron as does the latter (Cravioto and Miranda, Nos. 106, 110).

[92] Harris (p. 975) points out that "the Mexican has achieved an adequate calcium intake, for the average daily consumption of 280 gm. of tortilla furnishes more than 500 mg. of calcium in available form." It will be remembered that the Totonac maize consumption (chiefly in the form of dishes based on *nixtamal*) is about twice that of the general average for Mexico.

[93] Moreover, it seems likely that other local foods will prove to have a high calcium content, for example: goosefoot (*Chenopodium*, No. 75) and sesame (Cravioto et al., tables 1, 3). And the same holds for relatively little-used foods, such as *Crotalaria* (No. 91) (Cravioto and Miranda, No. 47) and *Leucaena* (Nos. 38, 196*a*) (Cravioto et al., table 3).

[94] Tortilla (Anderson et al., p. 1130); beans and dry chili (Cravioto et al., tables 3, 4); sesame and squash seed (Cravioto et al., table 3); pigeon pea (*Cajanus*, No. 95) (Cravioto and Miranda, No. 211; Munsell et al., table 2); *Leucaena* (Nos. 38, 196*a*) (Cravioto et al., table 3; Cravioto and Miranda, Nos. 212–214).

[95] Beans (Cravioto et al., table 3); chili (No. 214) (Cravioto et al., table 4); pigeon pea (*Cajanus*, No. 95) (Cravioto and Miranda, No. 211; evidently variable; cf. Munsell et al., table 2); *Crotalaria* (No. 91) (Cravioto and Miranda, No. 47); *Leucaena* (Nos. 38, 196*a*) (Cravioto et al., table 3; but variable; cf. Cravioto and Miranda, Nos. 212–214).

One *Spondias* tested high in iron; others were negligible (cf. Cravioto and Miranda, Nos. 106, 107, 110).

[96] Two samples of the local wild chili (No. 214) were tested at the Instituto Nacional de Nutriologia, through the kind offices of the Rockefeller Foundation. Our relatively dry sample, presumably including both flesh and seed, ran 1.37 mg. of carotene per 100 gm. Our sample of fresh, wild tomato (No. 24) yielded 3.88 mg.

[97] Chili (Harris, p. 975); coriander (Cravioto et al., table 1; Cravioto and Miranda, No. 28); chenopodium (No. 75) (Cravioto and Miranda, Nos. 67, 68, 89; Cravioto et al., table 2); amaranths (Nos. 104, 105) (Cravioto and Miranda, No. 88; Cravioto et al., table 1).

Of the vitamin B complex, thiamine presumably is provided by tortillas and beans, supplemented by chili seed, sesame, and, to a lesser extent, perhaps by the pigeon pea and *Leucaena*.[99] Riboflavin deficiency apparently is general in Mexico (Anderson et al., p. 1130), and there is no indication that the Totonac are better supplied than are other local peoples. "Tortillas, though not high in riboflavin, furnish the major proportion of this vitamin . . . because of the large quantities consumed. Beans rank next in importance" (Anderson et al., p. 1130). Among the Totonac, dry chili should be a useful source.[1]

Furthermore, it would appear that the Totonac are not overly well supplied with niacin. Undoubtedly maize, beans, and dry chili are important sources, supplemented by sesame and squash seed.[2] If the pigeon pea grown in Tajín shares the virtues of related forms from other parts (Cravioto and Miranda, No. 211; Munsell et al., table 2), it also might be useful.

Vitamin C (ascorbic acid) presumably comes from the local wild chili and tomato,[3] as well as from fresh corn (Cravioto et al., table 1). The Totonac appear to have a very considerable supply within reach, but relatively little exploited; and the intake could be increased materially through a larger consumption of citrus fruits, mango, guava, and *zapote negro*. Vitamin D presents no local problems, since exposure to solar radiation presumably supplies a sufficient quantity.

SUGGESTIONS

The foregoing summary of Totonac diet is offered somewhat hesitantly. Without specialized training in nutrition, we feel far from competent to discuss such problems; and the lack both of assays of local foods and of concrete measures of consumption makes judgment double difficult. It has been necessary to assume arbitrarily that plants grown in Tajín share, to a certain extent, the qualities of related forms found elsewhere; and statements concerning the extent to which a given food is used are largely impressionistic.

It is clear that the Totonac are abundantly provided with carbohydrates, moderately so with oils and fats. On the score of proteins, soybeans have been distributed to half a dozen Tajín farmers, for trial planting, and a larger scale exploitation of the pigeon pea (*Cajanus*, No. 95) has been suggested. However, the real need is for high quality protein; the only suggestion we can make—greater consumption of squash seed—manifestly is inadequate.

Of minerals, the calcium and phosphorus supply evidently is abundant. Iron might be increased through greater use of the pigeon pea, as well as of *Leucaena* (Nos. 38, 196*a*), which latter now is eaten primarily by children. Greater exploitation of *Crotalaria* (No. 91) would provide additional iron and, at the same time, would increase the carotene intake. Both the latter might be improved materially through the use of the sweetpotato leaf as a green, provided the Totonac could be persuaded to adopt such an innovation.

Of the vitamin B complex, both thiamine and niacin could be provided in larger quantities through increased consumption of the pigeon pea; *Leucaena* also could contribute to larger thiamine intake. Although Totonac diet almost certainly is deficient in riboflavin, on this score, we are unable to offer any suggestion. However, for vitamin C increase, a larger scale consumption of a number of fruits (citrus fruits, mango, guava, *zapote negro*) already at hand should be beneficial.

In short, obvious suggestions, based on rather insecure data, would include greater use of the pigeon pea, *Crotalaria*, *Leucaena*, and assorted local fruits, as well as the adoption of the sweet-potato leaf as a green. In making these suggestions, we have tried to indicate local products which might be exploited to greater advantage. To use the words of Harris (p. 976), "the solution of the nutrition problem of each country may be found in the proper use of its own food resources," and it would be unrealistic to think of improving Totonac diet in terms of wheat, beef, and dairy products.

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[98] *Crotalaria* (No. 91) (Cravioto and Miranda, No. 47); sweetpotato and manioc leaves (Munsell et al., table 2).

The following appear to be highly variable: sweetpotato (Cravioto and Miranda, Nos. 16–19; Munsell et al., table 2); *Leucaena* (Nos. 38, 196*a*) (Cravioto and Miranda, Nos. 212–214; Cravito et al., table 3); and *Inga* (Nos. 181, 195) (Cravioto and Miranda, No. 216; Munsell et al., table 2). Without specific tests of local products; it is impossible to guess how Tajín specimens will run.

[99] Tortillas, beans (Anderson et al., p. 1130); chili seed (Cravioto et al., table 4); sesame (Cravioto et al., table 3); pigeon pea (*Cajanus*, No. 95) (Cravioto and Miranda, No. 211; evidently variable; cf. Munsell et al., table 2); *Leucaena* (Nos. 38, 196*a*) (Cravioto et al., table 3; also variable, cf. Cravioto and Miranda, Nos. 212–214).

[1] Dry chili (Cravioto et al., table 4). One sample of avocado shows a low content (Cravioto et al., table 2), while another is extraordinarily high (Cravioto and Miranda, No. 4). Again, without assays of foods from the specific area in question, generalization is impossible.

[2] Maize, beans (Anderson et al., p. 1130; Cravioto et al., table 3); dry chili (Cravioto et al., table 4); sesame, squash seed (Cravioto et al., table 3).

[3] Tests of our wild, green chili (No. 214) indicated 54.2 mg.; semidry chili, 48.0 mg. per 100 gm. Since the latter sample contained 61.6 percent water, it was by no means concentrated, and local chili, thoroughly dry, presumably would test higher. Our fresh, wild tomato (No. 24) yielded 54.7 mg.

EATING HABITS

The first thing in the morning, the kitchen fire is laid, and black coffee—in most households, the charred maize substitute—is boiled. Sweetened generously with brown sugar, this brew is drunk by most men and a good many women. It is a standing joke among the neighbors that in one family, coffee is available most of the time; "they get up at midnight to make coffee."

In addition to this early morning beverage, the Totonac eat three meals a day of which the noon meal ordinarily is the most substantial. This may be a "recent" innovation, for the ancient Totonac are said to have eaten very lightly, with only 2 meals a day, one in the morning, the other in late afternoon (Las Casas, p. 463). In the poorer households today, breakfast and supper may consist of little more than tortillas, seasoned with salt and chili sauce, and washed down with coffee or atole. "Piecing" between meals is not unusual; probably it is more frequent among the women, who spend the day close to the kitchen, than among the men, who go to the fields where opportunities for nibbling are slight.

If the milpa is at all distant, the man does not return to the house at noon, but carries his lunch in a maguey fiber shoulder bag. The mainstay of every lunch is a stack of tortillas, brushed with chili sauce. These may be piled flat on top of one another, or they may be doubled, with the chili surface on the inside. To keep them soft and pliable, the tortillas are wrapped first in a banana leaf, which has been braised on the baking plate to make it flexible, then further wrapped in a clean cloth. To accompany the tortillas, there may be a boiled egg or, on rare occasions, meat. The Totonac do not know the general west Mexican practice of breaking the upper "skin" of the tortilla and of inserting a filling of egg, bean, or meat beneath it. Often a man carries an additional supply of chili, and he generally tops his lunch with a bottle of coffee or, more rarely, of atole. At noon, he eats the repast cold, despite the fact that he generally carries matches and that firewood is abundant. Some men complain that a cold lunch is not inviting, but no effort is made to heat it.[4] Similarly, children, who come from distant houses to attend school, carry their lunches in maguey fiber bags and eat their food cold.

If the milpa is reasonably close to the house, the woman often prepares the lunch and packs it—including a pitcher of atole or of hot coffee—in her wooden tray. She covers the contents with a neat white cloth, places the tray on her head, and carries the provender to the field.

Although kitchens are disorderly, the Totonac are unusually clean in their eating habits.[5] Before the door of most houses, a forked stick is set in the ground, its crotch supporting a shallow pottery bowl or gourd, filled with water (pl. 19, *a*, extreme left). Before the meal each person washes his hands. He dips water from the bowl, then, to one side, rubs his hands together, so that the water will fall on the ground, not into the vessel. At the conclusion of the meal, he washes his hands again and rinses his mouth with clear water, which he spits into the patio, not on the house floor. When guests are numerous, a pitcher of water is placed near the bowl, so that the supply may be replenished; and a large jar, with a gourd dipper, provides water with which the guests rinse their mouths.

Generally the men of the family eat first, together with any guests who happen to be present. They sit on chairs—sometimes very low ones—about a table, and are served by the women and girls. One informant had heard that in ancient times there were neither tables nor chairs; one sat on a low stool and ate from pottery vessels spread on the ground.

Women and children usually eat later. We know three families in which the wife eats at the table with her husband, at least upon occasion, but this practice evidently is most unusual. One mother invariably serves her children, starting with the youngest, before she herself eats.

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[4] In west Mexico, no self-respecting mestizo muleteer would think of eating cold tortillas, which become extraordinarily unpalatable. Even though the day of travel is long, the *arriero* takes a few minutes to gather firewood. He makes a stiff blaze, and when it dies down, toasts his tortillas or his *tacos* (tortillas with filling) on the coals.

[5] Of the sixteenth-century Maya, it is said: "No acostumbraban comer los hombres con las mujeres; ellos comían por sí en el suelo o cuando mucho sobre una esterilla por mesa . . . Se lavan las manos y la boca después de comer" (Landa, p. 107).

Virtually every family has at least one table. Seldom, however, is it covered with a cloth. This gesture is made only for very special occasions—for example, when the house is honored by a visit from the image of a saint. The use of a tablecloth is so infrequent that a woman guest is able to recall, with startling precision, in just which households and upon what occasions during the past few years she has seen the table so covered.

Dishes are, for the most part, of cheap commercial crockery. The favorite form is a soup plate, which serves either for liquids or solids, and a handleless cup. Crockery and enamel ware, which also is popular, are bought in Papantla. One old gentleman is said to be excessively fussy. If his dishes are not rinsed with lime (*limón*) juice, to remove the odor of previous foods, he refuses to eat. Children usually have their special dishes of homemade pottery, which is so porous that it undoubtedly absorbs bacteria like a sponge.

The universal eating implement is the tortilla, broken and doubled to form a sort of scoop in which the food is carried to the mouth. In this manner, even soup is eaten with neatness and dispatch, although occasionally we have seen a woman raise a plate of soup to her lips and drink directly from it. Often, meat is held in the hand and nibbled. One family boasts a set of spoons, purchased in honor of a visit from the priest of Papantla. This unique equipment was removed from storage for our benefit when we were guests in the house; but both the host and hostess disdained the cutlery and evidently found it more agreeable to eat with a tortilla.

Children eat informally and with a minimum of discipline. A gourd of tortillas is placed so that they may help themselves as they like in the course of the meal. One woman breaks a tortilla in small pieces and drops it into the dish of food prepared for her small child. The youngster then fishes out the tortilla with his fingers and eats it, together with adhering food—egg, beans, or whatever the plate may be. In one house which we visited, the children did not sit down to eat. They ran hither and yon, playing, and nibbling pieces of fried tortilla and hunks of a fresh corn *bollito*, which someone had sent the family as a gift. During their supper, they were outside the house as much as within it.

"A woman eats somewhat less than does a man," and a child eats proportionately still less. Long before a child is completely weaned, he begins to eat adult food. There is, of course, no cow or goat milk, and small children are fed atole. Before a youngster is a year old, he is eating tortillas and egg. All children drink "coffee," the beverage made of charred maize kernels and sweetened with brown sugar. Preparation of food for children is difficult when the mother works in the field. One woman, whom we know, leaves tortillas and coffee for her youngsters and gives them a more substantial meal about 4 o'clock, when she returns from the milpa.

Despite the fact that a child has supplementary feeding from a relatively early age, the prevalence of earth-eating among small children implies a major dietary deficiency. We personally are acquainted with three youngsters who eat earth and, by hearsay, know of several more. One mother punishes her child for this practice; a stepfather is apathetic, saying that the child "will die anyway, for there is no cure."

Like everyone else, the individual Totonac has likes and dislikes in food:

a. Don Mauro does not care for fermented atole made of purple corn (a standard dish), hence he plants no maize of this kind.

b. Don Manuel ate only four *enchiladas* at dinner one day because they were seasoned with wild chili. He was tired of that flavor and preferred that known as *pico de pájaro*, but none was available.

c. When Don Modesto eats soup (*caldo*) or fried egg, he drinks no coffee, because it nauseates him.

d. Moreover, he eats an egg only if it has been fried the moment he is ready to eat; if it stands, "he does not like it."

e. Don Pablo prefers tortillas and meat to all other foods.

FEASTS

Feasts are frequent. Almost every house has several small-scale fiestas during the year, when men are helping in the fields, to clear, to plant, or to cultivate. Moreover, some days following the birth of a child, there is a small celebration, attended chiefly by the members of the family. In addition, a good many men in Tajín are members of dance groups or of groups of musicians. These little bands of 10 to 20 men meet for all-night practice once a week during much of the year, and each session is the occasion for a modest feast. All the above are small gatherings at which there probably is a maximum of 30 persons.

But there are large feasts also, when a family entertains 100, or even 200, guests. As a preliminary to nuptials, the groom brings gifts to the bride's house; this is the occasion for a large festival, with a second on its heels, when the wedding takes place. Moreover, feasts are strongly associated with death—one at the wake; others particularly on the ninth and eightieth days following death; and still another on the anniversary of a year.

Large feasts likewise are associated with certain religious observances. When the image of a saint is brought to Tajín from a neighboring town, the more pious and the more prosperous make arrangements in advance for the *santo* to halt successively at their houses. At each stop, the saint is feted; a dinner is prepared more or less for the public at large; and music and native dances add to the pleasure of the saint. Sometimes—particularly after the sale of the vanilla crop—a family decides to buy a new image for its domestic shrine. When this image is duly blessed, a major festival takes place. Certain special days in the Catholic religious calendar also are celebrated from time to time. At least occasionally, when a new cross is dedicated, there is a big fiesta in the home of the donor, on Holy Cross Day (May 3).

With so many opportunities for festivity, social life in Tajín is sprightly. Since the community is small, a fairly high percentage of the population participates in the frequent round of social gatherings. We should guess that some sort of festival touches most families about once every 2 or 3 weeks.

At all feasts, meat is served in one form or another. For the little family celebration following the birth of a child, tamales are the only acceptable dish. And they likewise are the dish par excellence for most of the feasts associated with death. Generally at the latter, atole, *totopos* (p. 155), and *bollitos de anís* (p. 153) also are standard fare. Upon other occasions, a soup or stew of chicken or turkey sometimes is served, but the most acceptable menu is chicken, turkey, or pork in *mole* sauce, accompanied by tortillas and coffee. So strong is the association of certain dishes with certain feasts that when we artlessly asked if tamales were to be served at a wedding, we were regarded with aghast surprise, and then were told, with great amusement, "If there were tamales, it would seem more like a funeral than a wedding."

Evidently turkey and tortillas were standard company food in the early sixteenth century, for the Spaniards were offered that fare in "Quiahuixtlan," and by certain settlements subject to "Cempoala" (Díaz del Castillo 1:169, 174). However, we suspect that *mole* sauce may not be ancient among the Totonac. It appears to have no native name and, moreover, one of the chilis considered essential in this dish is said not to grow in Tajín; today, at least, it is purchased in Papantla.

Even for small feasts, the hostess generally is assisted by a few female friends or relatives; and, at large feasts, there is a formidable corps of neighbor women who come, by invitation, to give a hand. Despite the hard work involved, women enjoy the flurry and apparently are much pleased when they are asked "to grind" (maize), to haul water, or otherwise to give a day or two of hard labor gratis. Some women have special skill in preparing certain dishes—such as *tamales* or *totopos*—and they are much sought when a festival is in the offing.

Preparations start sometimes 3 days in advance and not infrequently the visiting cooks remain all night, instead of returning to their homes. The Totonac kitchen is ill-equipped to prepare food for a hundred or so guests, and most of the cooking actually takes place in the open-air patio adjacent to the kitchen (pp. 207–208). Utensils are borrowed from friends, and the whole undertaking proceeds with a minimum of confusion and disorder. Individual festivals will be described in Part 2 of this report.

At large feasts, the men of the household serve the tables,[6] at which guests of both sexes are seated. There is a steady stream of men, often barefooted, who bring tortillas, bowls of *mole*, and pitchers of coffee to the table. They serve quietly and without confusion. We attended one feast where a lone youth attended close to 50 guests; he was unflurried and managed with remarkable dispatch.

Apparently only male relatives, by blood or marriage, are eligible to serve, probably because they have free access to the kitchen, where are clustered the women of the family, together with neighbor women who assist in preparing the meal. At such feasts, the feminine corps in charge of the dinner remains virtually all the time in the kitchen or in the adjacent patio, where cooking activities are concentrated. After the guests have eaten, the cooks sit together, informally, in the kitchen, or at a table placed in the patio, and enjoy a belated meal.

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[6] The men waited on table in Texcoco in the days of Netzahualcoyotl (Torquemada 1 : 155).

As a matter of fact, serving problems at feasts are slight. The table is set, usually with a soup plate and a cup at each place. The food is placed in containers in the middle of the table—for example, tortillas in a gourd, *mole* in a bowl, and coffee in a pitcher. Each guest helps himself. Ordinarily, visitors eat in relays. When everyone of the first lot has finished, the diners rise in a body and leave the table free for the next group. Dishes are not washed between relays, and one serves himself in the same plate used by his predecessor. We have already noted that there is no cutlery, but a spoon generally is provided for serving *mole*. The chore of serving table is chiefly one of replenishing the supply of food, as one relay follows another at the table.

Feasts involve a very considerable expenditure, and, for some households, they spell virtual ruin. We know of at least one man who was obliged to sell his land, in order to meet the expenses connected with the funeral feasts for his wife.

Modesto González has calculated the expense involved in giving royal entertainment to the 10 to 15 workmen the day the milpa is planted. A summary of his figures has been given previously (p. 122). He estimates cost at $128.20 pesos, including $13.00 pesos for incense, candles, rockets, and a religious singer. Needless to say, not many households are able to spend so lavishly to have a field planted, and costs and fare vary directly with the economic status of the host. Each family, however, entertains the milpa planters to the best of its ability.

We ourselves gave a *mole* dinner for about 50 persons. Since our establishment was not suitable for large-scale entertaining and it seemed unlikely that we could prepare food to local taste, Pablo González generously offered his house and the expert assistance of his wife and stepdaughters, to supervise the meal. Together with Don Pablo and his wife, the following list of provender was drawn up:

	Pesos
For *mole:*	
2 turkeys @ 25.00	$50.00
3 kg. of lard @ 4.60	13.80
2 kg. *chile de color* 1 kg. *chile de mole*	10.00
2 oz. cinnamon	2.00
2 oz. cloves	.80
2 oz. black pepper	.80
Bread (*pan semita*)	1.00
For tortillas:	
2 *almudes* (24 liters) maize @ 2.50	5.00
Miscellaneous:	
3 kg. rice @ 1.20	3.60
3 kg. salt[1]	.90
5 kg. coffee	12.00
10 *mancuernas* brown sugar @ 0.50	5.00
4 cartons cigarettes @ 1.05	4.20
¼ kg. leaf tobacco	.75
10 boxes matches	1.00
1 small demijohn alcohol, chiefly for Negrito dancers	4.50
1 small demijohn "sherry," for the women cooks	4.50
3 kg. hard candy (suggested by us)	6.00
1 cake soap (for dish washing)	1.00
Total	$126.85

Don Pablo donated onions, wild tomatoes, and coriander. Actual expenses exceeded the calculations by nearly $30.00 pesos.

As a further demonstration of the expense involved in a large feast, we have an estimate provided by Leandro Méndez, of the cost of entertaining in honor of the image of St. Joseph in his father's house. Several meals are involved. The ten or so men who made palm ornaments for the altar were given supper one day, and a meal the following morning; moreover, the next succeeding day, the same assistants were served both breakfast and dinner. Apart from these aides, dinner was provided for well over a hundred guests. Probably, in all, between 200 and 250 servings are involved. The dinner fare was, as usual, *mole*, tortillas, and coffee. In addition, as a very special gesture, presumably for breakfast, flour, sugar, and eggs were bought and bread made, probably by a nephew whose house is equipped with an oven. The estimate follows:

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[1] This is approximately 6.5 pounds of salt, which seems excessive, yet precisely the same amount appears below in the accounts of the Méndez family fiesta. Perhaps it is customary to buy this quantity of salt for any large *mole* feast, whether or not it is used. A neighbor, who overheard our discussions while standing outside the house, told us privately that he thought the lard estimate was "very exaggerated."

	Pesos
For *mole:*	
3 turkeys @ 25.00	$75.00
4 hens @ 8.00 [1]	32.00
2 roosters @ 10.00 [1]	20.00
1 pig	100.00
.5 *latas* (presumably half a 5-gallon tin) lard	35.00
Cinnamon	3.00
Cloves [2]	1.20
For tortillas:	
9 *almudes* (108 liters) maize	22.50
For bread:	
6.25 kg. sugar	5.40
Flour	28.00
Eggs	3.75
Miscellaneous:	
3 kg. salt	.90
10 kg. coffee	28.00
Brown sugar	15.00
3 cartons cigarettes @ 1.15	3.45
3 demijohns *aguardiente* @ 4.50	13.50
2 bottles *aguardiente* @ 1.50	3.00
3 demijohns "sherry"	7.50
Special items:	
3 kinds of skyrockets	13.65
Materials for a new dress for the image of St. Joseph, made by the daughter of the family	50.00
Total	$460.85

[1] Price excessive.

[2] Apparently through oversight, chili is not listed.

It is clear why not more than four or five families in Tajín are able to receive St. Joseph on his annual pilgrimage. One man, usually among the hosts, told us regretfully that he had not been able to invite the saint that year, because his supply of maize was low. But corn is a very modest item when the total expense is figured. Feasts are important in the budgets of most Tajín families, although relatively few entertain on the scale of the Méndez. Yet every family is under obligation to offer several large feasts following the death of its members, and it is evident that death is a costly business for the survivors.

SMOKING

Both men and women smoke. "Some smoke all day, but most, only in the morning or evening, so as not to become dizzy with the heat." One elderly woman feels tired and her legs ache if she refrains from tobacco. Youngsters begin to smoke at an early age, and occasionally one sees a child between 2 and 3 years, seated beside his mother, gravely puffing on a cigarette. Little Maclovio Calderón, aged 3, repeatedly asked us for a *puro*; and his small sister, aged 6, collected all burning cigarette butts in sight and puffed on them.

Commercial cigarettes are smoked quite generally, by both sexes. However, many people, both men and women, prefer to roll a cigar (*puro*); "it lasts longer." Tobacco is not grown locally and that purchased in Papantla is thought to come from the vicinity of Gutiérrez Zamora and Comalteco and from some "unspecified" part of the Huasteca. A leaf is cut to rectangular shape, and shredded tobacco is sprinkled along one edge. This then is rolled, first between the fingers, then between the palms. Occasionally, a host passes leaf tobacco among the guests, so that they may make cigars.

It is said that fifty or sixty years ago, the pipe was in general use, although now it has disappeared completely. Leaf tobacco was rolled between the palms and placed, unshredded, in the bowl. Regardless of type, the pipe is known, curiously enough, as *cachimba* (púškuliʔ).

Two kinds of pipe were described and models made for us. One (fig. 18, *b*, *c*) is a simple elbow

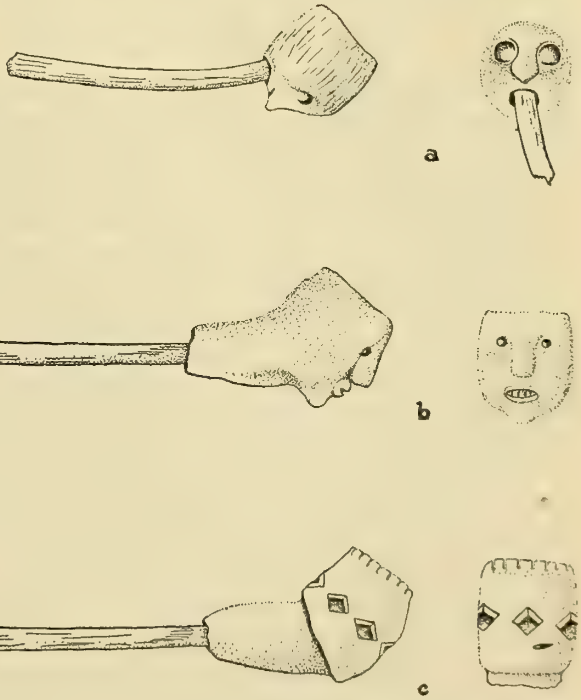

FIGURE 18.—Model pipes. *a*, Bowl of *coyol* palm; *b*, *c*, of clay. See text (pp. 175–176) for description. *a*, Made by Lorenzo Xochigua; *b*, *c*, by Modesto González. Scale: ½ natural size.

pipe of clay, formerly manufactured by the women, but smoked by both sexes. The mouthpiece was made from the steam of any of several different plants (Nos. 201, 271, 336); another plant, not represented by a specimen, is called *cuerno de venado* (sakalaɔ kajúkiˀ). Cane (No. 336) was least desirable, since it heated as the pipe was smoked and turned brittle with use.

The other pipe (fig. 18, *a*) was ingeniously fashioned from the nut of the *coyol* palm (No. 362). A large fruit was selected; the point, not the butt, was sliced off with the machete; and the oily meat was removed. At the base there are three small depressions; one either is connected by a channel with the interior, or is separated from the latter by a very thin skin. This natural cavity was opened somewhat, with a knife, and the central aperture of the nut likewise enlarged. The stem, of the same materials mentioned above, then was fitted into the small natural cavity at the butt. The palm nut bowl sometimes was ornamented with commercial ink—"the kind used for writing."

We know no Totonac who chew tobacco, but allegedly this custom is found among a few; "there even are some who chew cigarette butts and who eat cigarette ash."

HOUSING[7]

At the time of the Conquest, the Totonac of "Cempoala" are credited with houses "of adobe and others of masonry" (Torquemada 1:396); it is these which gave rise to the old, familiar story of the Spaniard who mistook their white plaster for silver (Díaz del Castillo 1:170; Las Casas, p. 129; Torquemada 1:396). Further reports indicate that floors and patios were plastered and painted (Las Casas, p. 129); there is, moreover, mention of streets, and each house is said to have had water at hand (Torquemada 1:396) and an orchard or garden adjacent. These idyllic descriptions evidently apply to the houses of the "principal people," and the bulk of the population presumably lived in houses similar to the native type found today in Tajín.

As a matter of fact, a specific statement from the late sixteenth century reports that the governor and "some of the principal people" of Jonotla lived in masonry houses with plaster walls, while the remaining inhabitants occupied houses "fenced with sticks and covered with straw" (Paso y Troncoso 5:130). About the same time, the Misantla Totonac house is described as fenced with cane and roofed with straw; earth and stone did not enter into the construction (Relación de Misantla). Presumably, these houses were similar to the type which still prevails in Tajín.[8]

The typical Totonac house (pl. 9, *a*, *b*, *e*) today is simple and is ingeniously constructed of local materials. On the whole, it is well suited to local needs, although it is more comfortable in warm weather than during the chill winter months.

Invariably the ground plan is rectangular or square; the apsidal form[9] is unknown. The roof of four sheds is thatched, with palm, grass, or leaves. It rests on a framework of poles, supported by uprights set in the ground and connected by stringers. The walls, generally added after the roof is fiinished, are of slender upright poles or bamboos, which do not support any of the weight of the roof. Characteristically, the structure is windowless, but light and air enter and smoke escapes through the interstices between the wall poles. Doors, generally in the long side of the rectangular house, are skillfully made of split bamboo.

This appears to be the aboriginal type of dwelling. Ordinarily, it is built of materials found in the *monte* and requires no nails or other introduced refinements. The frame is lashed together with liana, and the same material is used to affix thatch and wall poles to the frame. Sometimes the upright poles of the wall are plastered with mud, giving the superficial impression of an abode structure (pl. 3, *a*).

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[7] A number in parentheses, following the name of a plant, refers to the herbarium catalog, which is published in Appendix C.

[8] At present, two main masonry structures are in use in Tajín, both constructed by professional masons from Papantla. One, of stone, is the school; the other, of brick, is at the archeological site, and was built to house the caretaker and, on his occasional visits, the Government archeologist. In addition, the ruins of a stone house, intended as a dwelling, stand on one of the lots of the *fundo legal* (map 7, lot No. 10). These few masonry buildings have been excluded from the current discussions; sweathouses, which often involve rough masonry, are treated separately (pp. 199, 201–202).

[9] The apsidal house, with rounded ends, is common among the Maya of Yucatan and also is found among some of their neighbors (Wauchope, pp. 16–19). It is to be seen occasionally in the Huasteca.

Starr, (p. 268, and photograph facing p. 272) describes and illustrates a house in Pantepec, whose "corners . . . are rounded." However, neither his description nor his illustration appears to apply to an apsidal house.

Certain changes have come with time. Occasionally, wire instead of liana is used as lashing. Some of the more prosperous families build the house frame of substantial, squared timbers, and place on it a tiled rather than a thatched roof. In such cases, the doors may be of wooden planks, with commercial, metal hinges. Often a tiled roof is combined with the usual wall of upright bamboos (pl. 9, *d*), but in a few cases, the walls are of planks (pl. 9, *c*, *f*). Since there are no windows and few doors, such houses have relatively little ventilation and are far less comfortable in hot weather than are the old-style, less pretentious structures.

We have detailed information concerning 74 individual structures which are occupied by 39 families, more than half of whom have a ménage consisting of two or more houses. Most lie within the *fundo legal*, where there is a much higher frequency of tiled roofs and of plank walls than is found on outlying parcels. Our data may be summarized thus:

	Number of houses
Roofs:	
Palm:	
Palma redonda (No. 259)	17
Palma real (No. 364)	20
Palma redonda and *real*	1
Unspecified palm	2
Grass	3
Leaves (*misanteca*, No. 169)	2
Tile	29
	74
Walls:	
Upright bamboos	48
Upright poles, various kinds of wood	14
Either poles or bamboos (entry ambiguous)	1
Planks	7
Various combinations:	
Poles and bamboos	2
Poles and planks	1
Poles, planks, and bamboos	1
	74

Walls of upright poles or bamboos predominate; of the 65 instances, 6 have a coating of mud plaster. Planks enter into the composition of the walls of only 9 of the 74 houses. In roofing, departure from the presumed native type is more evident, and 29 of the 74 structures are tiled; in 20 of these cases, the tile is combined with pole or bamboo walls.

All told, it would appear that the native type of house is holding its own. It has many advantages; all the necessary materials are available locally; the technical demands are slight, and any Totonac is able to build a house, sometimes with the aid of only one other individual. Moreover, the house is relatively inexpensive to build (pp. 185–186), and is, on the whole, well suited to local needs.

On the basis of our somewhat limited census, we may guess that about one-third of the Tajín families live in a single dwelling. The others have a cluster of two to four distinct buildings, at no great distance from one another:

	Number of families
Single house, with or without interior partitions	13
Two houses	18
Three houses	7
Four houses	1
	39

When a family lives in a single dwelling which does not have interior partitions, obviously the same room is parlor, kitchen, dining room, and bedroom. However, of the 13 single dwellings, 7 have interior partitions, from the floor to a height of something less than 2 m. In two cases, there are multiple rooms, and sleeping, cooking, and living quarters are separated from one another. However, these are sophisticated households, of two local merchants, both from Papantla—one Totonac, the other non-Totonac. Accordingly, both households are atypical.

Of the single dwellings, two have a partition which separates the kitchen from the living room. One family sleeps in the kitchen; the other, in the living room. The remaining three houses have kitchen and sleeping quarters divided by a partition; either serves as a living room, where the family congregates and where guests are received.

When there are two separate buildings per household, one invariably is the kitchen and the other, the living room. Some (8 families) sleep in the living room; some (7) in the kitchen; and the rest (3) sleep both in living room and kitchen.

There are seven households whose domestic activities are spread over three separate buildings. As usual, one building is the living room, another is the cook house (5 families sleep in the former; 1, in both living room and kitchen; 1, in neither). The third building is utilized as follows:

	Number of families
Unoccupied	1
Bakery	1
Originally built as a shelter for swine; now rented to another Totonac family as a dwelling	1
Bedroom exclusively	3
Originally a granary; now a single, all-purpose dwelling, occupied by a recently married son	1
	7

The household with four buildings has them divided thus: living room; kitchen; and two separate houses, each of which is a bedroom. The family is numerous. The daughters sleep on woven mats spread at night on the living-room floor; the head of the family and his wife sleep in a separate bedroom house, which also serves as a granary; the sons, in another, which at times likewise is used as a supplementary granary.

THE NATIVE HOUSE

In Spanish, the native house is called *casa de palma* (palm house); in Totonac, any house with thatched roof is known as akštʌ́qʌˀ

The house is either square or rectangular, usually the latter, with gabled roof. The gable end is not vertical, but inclines slightly, thus forming a short shed at either end of the structure (pl. 9, *a*). In rare cases, not all the area covered by the roof is walled, and the unwalled extension serves as a porch. Often, a lean-to is attached to the house (pl. 9, *e*), but, basically, the latter is rectangular, with four sheds.

House dimensions generally are reckoned by *varas* (yards) rather than by meters. With all the materials at hand, it is said that two men are able to erect a house 3 by 6 *varas* in the course of 2 full days. As a matter of fact, much of the work of building a house can be handled by one man—except for raising the beams and the scissorlike poles which support the ridge. It is far handier, however, to have at least two men work on a house, and generally a house builder invites numerous friends to assist. Some are paid in cash, by the day; others come with the understanding that their day of labor will be repaid in kind, at some future date. All workers are given at least their noon meal by the host.

MATERIALS

Materials are gathered well in advance. Months ahead of time, a prospective house builder shops for suitable house posts—either used posts from an abandoned house, or trees which can be converted into new posts. He selects hardwoods,[10] which will resist rot and borers; beams generally are of the same durable woods. In addition, a builder must have an adequate supply of somewhat lighter, but durable poles for the roof frame,[11] and a great quantity of withes and liana.[12] Moreover, he must assemble thatch (pp. 181–183) for the roof and either bamboo or upright poles[13] for the walls.

Few people can draw exclusively on their own lands for all the necessary materials, and some of the basic supplies usually are acquired through a series of small-scale commercial transactions. In any case, materials must be cut and hauled to the house site, and a considerable amount of preliminary labor and planning are involved.

FRAME

When the actual building starts, a light stick is cut a *vara* in length, to serve as a measure. With the metal *coa*, excavations are made, generally 3 *varas* apart, and about 1 in depth, to receive the posts. The loosened earth is removed with the hands. The posts then are stood in the holes, about a third the length of each going below ground. Ordinarily, for the thatched house, neither posts nor beams is squared; sometimes, squared posts are combined with untrimmed beams.

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[10] Posts generally are of *cedro, zapote chico, moral, copalillo, chijol, escolín,* or *alzaprima* (Nos. 219, 191, 324, 205, 176, 338, 206, respectively). In moist soils, *zapote chico* is said to last better than do other woods, provided it is cut and set green; however, "in sandy soil, it rots at once." *Chijol* is the most enduring of all woods and lasts close to 50 years; *zapote chico* and *moral* have an expectable life of 35 to 40 years. In view of this longevity, no Totonac spurns such timbers second-hand, and the same posts may be used by the second, and even the third generation of builders. A further wood, *quince* (no specimen), also is suitable. "It does not grow tall, and only one post comes from a tree." In addition to the above-mentioned woods, house beams sometimes are of *palo de rosa, caoba, tabaquillo,* and *guasimilla* (Nos. 171, 194, 241, 337).

[11] Many local woods are used for roof poles: *pata de vaca, capulín, cojón de gato, zapote chico, frijolillo, caoba, copalillo, guayabillo, tabaquillo, palo de lodo, huesillo,* and *guasimilla* (Nos. 69, 85, 138, 191, 193, 194, 205, 208, 241, 287, 330, 337). In addition, a species of *Prunus* (No. 322) and a tree called *guacimín* (no specimen) are acceptable.

[12] Withes are laid horizontally on the roof frame and to them the thatch is lashed. Withes generally are of two kinds of *capulín* (Nos. 21, 85); *chilillo* (No. 112); an *Abutilon* and a species of *Guatteria* (Nos. 17, 321).

The preferred liana for house lashings is *bejuco real* (No. 133); sometimes *bejuco colorado* (No. 131) is substituted, at least, for tying roof poles, thatch, and the uprights which form the walls.

[13] Formerly, *zapote chico* saplings were favored for house walls, but the supply is pretty well exhausted. Today, the following are most popular: *palo de volador, laurel, palo de lodo* (Nos. 28, 130, 287), and a species of *Podachaenium* (No. 188).

Next, the two principal beams, known as the mother beams (*vigas madres;* fig. 19, *a–f*, No. 3) are set in notches which have been cut in the posts, and are lashed in place with liana. At each end of the house, a cross beam is tied on top of the mother beams (fig. 19, *a-d*, *f*, No. 4).

One of the men now climbs on top of the frame. With a stone tied to a string, he tests the posts, to be sure that they are vertical. They are shifted as necessary, following which earth and small stones are packed about the base; the fill is tamped with a substantial stick, whose butt has been smoothed. Immediately thereafter, the remaining cross beams (fig. 19, *a*, No. 4) are lashed to the mother beams, each a *vara* from its neighbor. (The length of any Totonac house is evident by counting the transverse beams exposed on the interior.) Once all the cross beams are in place, an additional longitudinal beam is placed in the center, on top of them; it runs the full length of the frame, parallel to the mother beams (fig. 19, *a*, No. 5).

The roof frame is added next. Four poles, of durable wood, but lighter weight than the beams, are notched near the butt to engage with the mother beams (fig. 19, *e*). Their tips are crossed and lashed together, with a small reinforcing stick (fig. 19, *d*, No. 10) on the under side of the juncture. Poles so tied have the form of a double, inverted V and, because they have considerable play, are known as scissors (*tijeras*). One set of scissors, each of four crossed poles, is prepared for each end of the house (fig. 19, *e*, No. 6). If the building is small, one more set for the middle suffices; if the house is long, several intermediate ones are necessary.

The scissors are tied on the ground and the inverted V stood against the end of the structure. Two men climb to the terminal cross beam, against which the scissors rest. They alone, or with the assistance of others, raise the inverted V, and shift the four poles until the notches engage with the mother beam. Next, they incline the scissors toward the center of the house, to form a somewhat sloping gable, or short shed. When the scissors are in place, the butts of the four component poles are lashed to the mother beams.

With the two end scissors and the one or more intermediate sets securely in place, the ridge pole is hoisted so that it comes to rest in the angle formed at the summit by the crossed poles (fig. 19, *d*, *e*, No. 7). Supplementary roof poles (fig. 19, *d*, No. 8) are laid between the scissors. They run from the ridge to the mother beam, their butts notched to engage with the latter. Light saplings, known as *cañaduras* (*sic*), are tied vertically across the gable end (fig. 19, *f*, No. 12).

The next step is to reinforce the roof frame. A pole, light in weight but rigid and durable, is lashed the full length of each long shed, on the inner side of the scissors and supplementary poles. Sometimes there are two such reinforcements (pl. 10, *d;* fig. 19, *d*, *e*, No. 9). Transverse struts (pl. 10, *f;* fig. 19, *e*) connect the opposing poles, but if there are two sets, ordinarily they connect only the upper ones. Undoubtedly, the struts add to the stability of the frame, but they are regarded chiefly as supports for a temporary floor on which the thatching material is later placed, as the roofing approaches the ridge.

A supplementary beam, which supports no weight, but which holds the butts of the scissors and other roof poles against the mother beam, is lashed on the outside of the latter (pl. 10, *e;* fig. 19, *d–f*, No. 11). A similar secondary beam is tied on the outside of each of the two terminal cross beams, on top of the vertical poles of the gable end (fig. 19, *f*, No. 11). These additions not only make the roof frame more stable, but they result in small-scale eaves on all sides of the house. Presumably for this reason, this secondary beam is called *carga-zacate* (carry grass).

The last step in preparing the roof frame is to add a series of horizontal, flexible withes (lokoyo, *huiles;* pls. 10, *e*, 11, *a*), to which the thatch is to be tied. Generally, three men climb to the top of one of the long sheds; one is stationed at either end, and the third, in the middle. To them, the withes are passed and, starting at the top, they tie them to the scissors and intervening roof poles. Long, loose ends extend outward at either side of

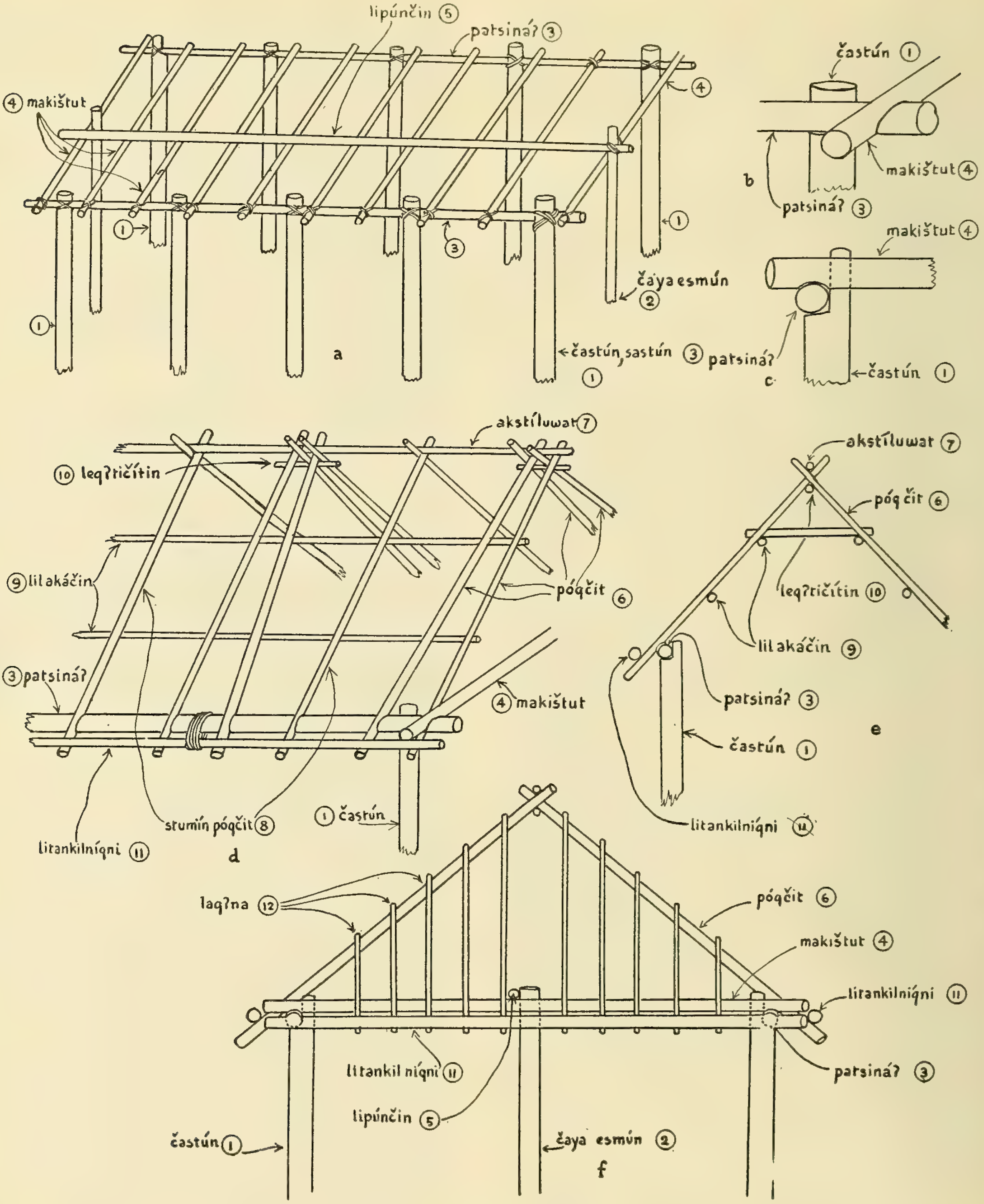

FIGURE 19.—Frame of native house. Component posts, beams, and poles are indicated by Totonac names and, to facilitate reference in the text, are numbered. *a*, Basic frame, of posts and beams; *b*, *c*, corner detail, showing relationship between post, mother beam, and terminal cross beam; *d*, roof frame; *e*, profile of roof frame; *f*, gable end in elevation. Adapted from a field sketch by Roberto Williams García.

the long shed (pl. 10, *e*); later, these are bent over the gable ends (pl. 11, *a*). The distance between the horizontal withes is approximately one *jeme* or one *cuarta*, roughly 20 cm.

THATCH

The roof is thatched before the walls are added. A series of bamboos, poles, or planks is laid longitudinally cross the top of the cross beams. Along both sides of this platform the thatch is neatly piled, leaving the center clear. Unless the covering is of split *palma real*, the men are on the outside of the roof frame and, if necessary, can reach through it for material. Generally, additional workers stand in the clear space of the platform and pass thatch to the men on the outside.

Thatching starts with the lowest course. The men stand or squat, barefooted, on the supplementary beams which are lashed on the outside of the mother beams and of the two terminal cross beams. If there are several men, they station themselves equidistant from one another, along the lower edge of the roof.

Thatch is affixed to alternate withes. The lowest one is skipped, and the first course is tied to the withe next to the bottom. Intervening withes keep the covering from dropping inward and downward. Each man ties the lowest row from right to left; that is, work is clockwise. He continues until he reaches the work of the adjacent companion on his left. On the second course, progression is counterclockwise, "to make the roof waterproof."[14] After the first few courses are laid, the men stand on the withes. As the ridge is approached, the platform no longer is readily accessible, and a higher one is improvised, by resting poles or bamboos on the struts which run transversely from one long shed to the other.

The technique of thatching varies somewhat according to the material used:

Palma redonda (No. 259).—This palm provides the least expensive roofing and for that reason is popular. However, it seldom endures more than 2 or 3 years. Constant smoking helps to preserve the palm, hence this particular thatch is especially favored for kitchens. It is said that 2,500 leaves are necessary for a house 8 *varas* long; 4,000 are cut for a house 6 by 12 *varas*. At present, the price is between $0.75 and $1.00 peso a thousand, with the purchaser doing the cutting.

The palm is stacked in orderly fashion on the platform which rests on the cross beams, with the base of the leaves toward the center of the house. Down the middle of the platform are two planks, on which workers walk back and forth, as they hand the palm through the frame to the men on the outside.

We observed two methods of tying *palma redonda* (fig. 20, *a*, *b*). The leaves are laid double, one on top of the other. The basal segments are split on either side but are not removed, and with them the leaf is tied in place.

A different technique was applied to a small granary thatched with *palma redonda* (pl. 11, *g*). One man climbed to the roof frame with the aid of his bamboo ladder. He sat on the outside of the frame, bracing himself against the withes, and facing outward. He worked from bottom to top, from his left to his right. However, he did not complete one course before continuing to the next upper one. To tie the palm, he reached between his knees (pl. 11, *g*). An assistant on the ground handed him the necessary palm from time to time.

Palma real (No. 364).—In contrast to the preceding, this palm has long, slender leaves; it lasts 25 to 30 years as thatch; and the initial cost is proportionately high. One informant calculates 300 leaves to roof a house 8 *varas* long; another thinks a house 6 by 12 *varas* requires 1,000. The current price is $10.00 pesos a hundred, with the purchaser doing the cutting; one man asks $15.00 a hundred, for the right to cut on his land.

There are two principal methods of thatching with *palma real*. One is to cut the leaves in lengths of about a *vara*. The base of the petiole is laid vertically against the outer surface of the withe and is affixed to it with liana (fig. 20, *c*).

The other method involves splitting the leaves the full length of the midrib. The tip is opened between the fingers; "it opens easily; no knife or machete is used." Next, the split leaves are cut to uniform length, if possible to correspond to that of the long shed of the house; extra length is allowed for splicing, and short pieces left over are used for the gable ends.

Once cut, the split palm is stacked, in the same order in which it is to be applied to the roof. If the first half leaf has the base of the petiole toward the right, the second is placed upon it, with the base to the left. This alternation compensates for the difference in thickness of the petioles and makes it easier to lay the thatch in even, closely spaced, horizontal rows. Moreover, the segments of the upper half leaf run roughly at right angles to those of the lower (fig. 20, *e*), thus giving added protection against rain.

The gable ends, roughly triangular, are thatched first. A split leaf is placed against the lower poles (fig. 19, *f*, No. 12), with the segments downward. Then, with liana, the midrib is caught in place (fig. 20, *d*, *e*,). It is not attached to every pole, and figure 20, *f* indicates to which the various courses generally are affixed.

Work is not clockwise or counterclockwise, but upward.

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[14] We observed this twice, but are not sure that it holds for all thatching. It may vary with material, with the type of structure, and with the number of men working. A small granary was roofed in much less organized fashion (see below).

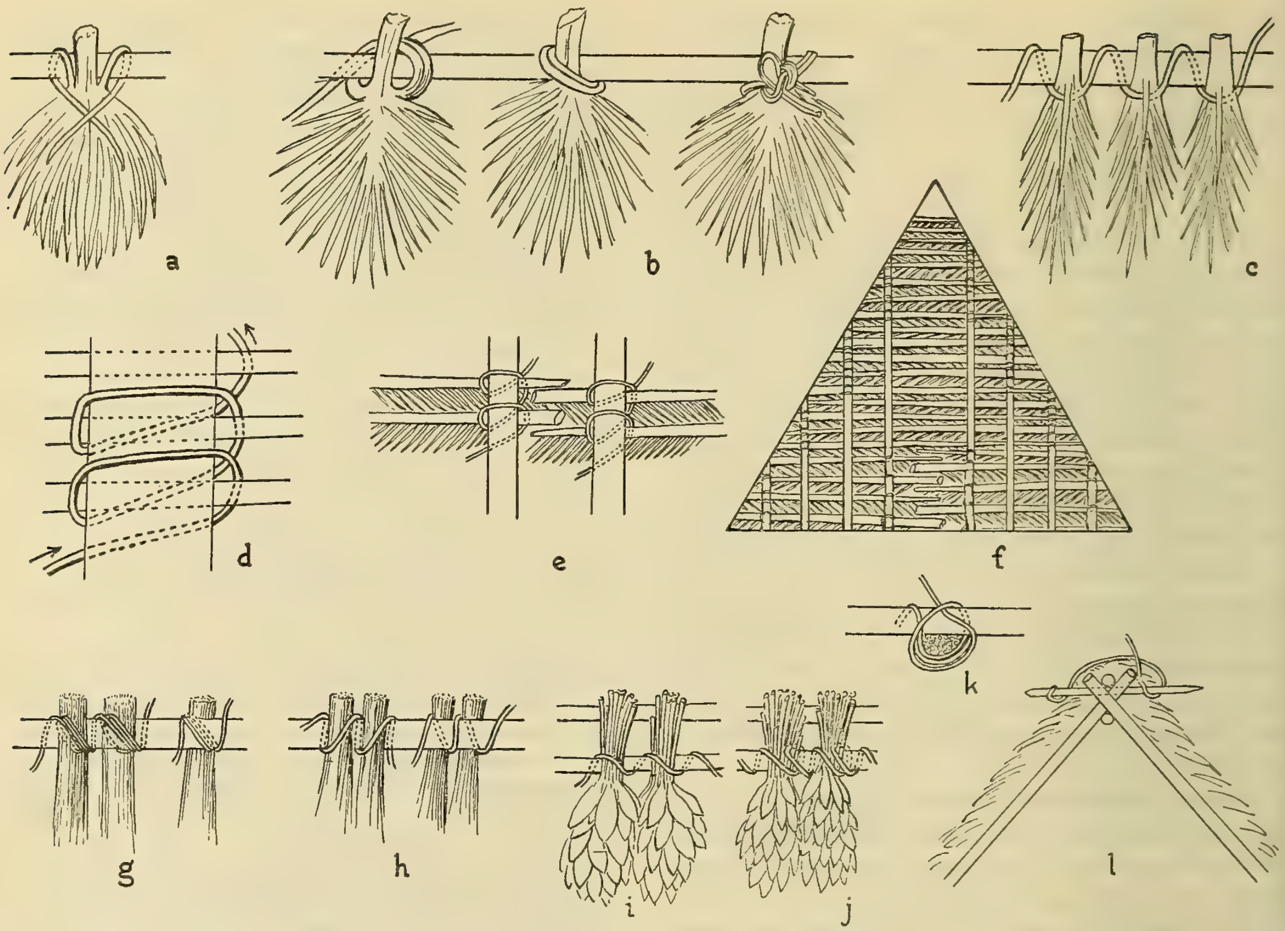

FIGURE 20.—Thatch. *a, b, Palma redonda,* entire leaf; *c, palma real,* cut to short lengths; *d–f, palma real,* split down midrib, to form half leaf; *g, h,* grass; *i–k,* laurel (*misanteca*); *l,* transverse stick by which thatch is secured at crest of roof.

a. At each side, basal segments are split, but are not removed; sometimes they are twisted slightly. The base is placed against the exterior of the roof withe; the split segments are passed upward and around the withe, then are brought to the outer surface and tied. On the interior (not shown), two strips (segments) of palm leaf cross the withe vertically.
b. Similarly, basal segments are separated, but are not removed. They cross diagonally on the underside of the withe, then are carried to the exterior and tied. The three sketches show the exterior at the start, followed by interior and exterior views, after the strips have been tied.
c. Palma real is cut in short lengths which are lashed with liana to the roof withe.
d. Detail of affixing split *palma real* with liana; for the sake of clarity, segments of the half leaves are not shown. The split leaf is applied directly to the roof poles, without the necessity of transverse withes; work direction is upward, not clockwise or counterclockwise, as in other types of thatch.
e. Splicing split *palma real;* lashing as shown on larger scale in *d.* Note that base engages with tip and that the axis of the segments of the half leaves alternates.
f. The gable end, or short shed, of the roof, showing the poles to which split *palma real* leaves are lashed. At the lower and wider part of the shed, the half leaves are spliced, as indicated in *e.* Above, as the gable narrows, a single half leaf is sufficiently long, and no splicing is required. Note that each course of thatch is not affixed to every roof pole.
g, h. Two methods of affixing grass thatch with liana; exterior and interior views shown for each.
i, j. Two methods of applying *misanteca* thatch with liana; both are exterior views.
k. Method of securing liana, with *misanteca* thatch, when a new length is required; view from above.
l. Short, pointed sticks thrust transversely through thatch at the crest of the roof. Liana is looped over these, in figure-8 fashion, to secure the thatch at the crest.

As each split leaf is tied in place, the worker forces it downward with his feet, against the preceding course.

Next, the long sheds are thatched. For a house of considerable size, three or four men work simultaneously, on the inner side of the roof. Again, the split palm is not tied to all the roof poles; each worker lashes the part in front of him to the pole immediately to his right and to his left. Accordingly, if there are three men working, each half leaf is tied to six of the roof poles. Work proceeds as before. If a midrib is particularly thick, it is notched with the machete, so that the liana will clutch it firmly. Splicing is done precisely and with great care (fig. 20, *e*).

We are uncertain how the junctions of the four sheds are made waterproof. Unfortunately we had no opportunity of witnessing this type of thatch in construction, and the account above is based on description, as well as on observation of completed roofs.

From the interior, the finished roof of split *palma real* has a pleasing aspect. One sees principally the narrow, closely spaced, split midribs. The Totonac are perfectly aware of its esthetic appeal and it is said that split palm is favored because the inside roof is "handsome."

It is worth pointing out several aspects in which the technique of applying split palm varies from the more usual thatching method: (*a*) no withes are required; (*b*) the palm is tied directly to the roof poles; (*c*) the axis of the leaf is horizontal, not vertical; (*d*) work direction is upward, not clockwise or counterclockwise; (*e*) men work on the inside of the roof frame, not on the outside; (*f*) careful splicing is involved; (*g*) gable ends are thatched prior to the long sheds.

Grass.—Two kinds of grass, *zacate colorado* and *zacate guinea* (Nos. 275, 245) often are used as thatch; the former is the more durable. Both are handled the same way, and it is said that the dry leaf of sugarcane may be similarly treated. We have observed no roof of cane leaves and believe its use to be infrequent.

Grass generally is tied in small bunches (pl. 11, *b*), so that it may be handled more easily. A small bundle is arranged, with the roots together, and the lot is wrapped, near the root, with a length of the same grass. Sometimes, however, grass thatch is applied without being prepared previously in bunches.

As usual—except when split *palma real* is involved—the workmen are on the exterior of the roof frame and tie thatch to every alternate withe. Two lashings are shown in figure 20, *g*, *h*. Basically, they are similar. One, however, has a double diagonal wrapping; and it appears that one sketch represents a section made when the work was proceeding clockwise; the other, counterclockwise.

Misanteca (No. 169).—This is a laurel which, as roofing, lasts about as long as does *palma real*. It is generally said that the leaf roof is "very fresh," that is, cool in hot weather. However, this thatch is little used today because the tree has become scarce; moreover, "not everyone knows how to make a *misanteca* roof that will not leak."

The cost is considerably less than that of *palma real*. In one case, a parcel owner, for the sum of $15.00 pesos, permitted the cutting of sufficient *misanteca* to roof a house 10 *varas* long. (However, the purchaser confided in us that he had basely represented the house as of 9 instead of 10 *varas*.) Preliminaries were somewhat protracted: 5 man-days were spent in cutting the necessary sprays, plus 2 more in hauling the material to the house site.

As the sprays are cut, they are piled on the ground carefully, with all the stems heading the same way, and with the rough undersurface of the leaves downward. Something heavy, such as odd house beams, is laid on top of the piles, as a press. *Misanteca* must be used within several days after it has been cut, or the leaves shed.

The pressed sprays are collected in large bundles and are trundled to the house on the back, with the aid of a head tump. They are laid on the floor of the house and, as needed, are hoisted to the temporary platform laid across the beams. Great care is taken that the piles be neatly arranged, with all the stems in the same direction and, this time, with the shiny surface of the leaf downward.

As usual, the men who thatch are stationed on the outside of the roof frame (pl. 11, *d*, *f*). One remains inside, on the platform on top of the beams, to pass the material to his companions. He hands the several sprays, stems first, between the poles and withes of the frame. *Misanteca* is not tied in individual bunches as is grass; two to eight individual sprays are applied at a time, according to the thickness of the stem. As usual, *misanteca* is affixed to every alternate withe, with liana.

The thatcher clutches the several sprays in his right hand, the liana in his left. He places the sheaf against the outside of the withe, with the shiny surface of the leaves downward; otherwise the leaves shed. He secures the bundle with liana (fig. 20, *i*, *j*), pulls the latter taut, and catches it temporarily between the stems of the sheaf, so that it will not loosen before the next lot is forthcoming. At the time we watched thatching with *misanteca*, the men were working counterclockwise; we neglected to ask if direction changed with succeeding courses of thatch.

Inspection of a finished house gives little indication how the problem of thatching the ridge is handled. Unfortunately, we did not have opportunity to witness this particular stage of construction. It is said that "years ago, many houses were thatched with grass." Extra layers were added at the ridge and each was braided with the preceding course. As many as 12 or 15 layers were added, and the completed roof "had braids each side of the ridge." This form of braiding is called takstitkonšíʔa. It no longer is current in Tajín but presumably resembles the ridge treatment still to be seen in parts of the old Huasteca.

About all we can say concerning roof finish is that the thatch is applied heavily along the crest, following which several short, sharpened poles are thrust through transversely, at spaced intervals, just beneath the ridge (fig. 20, *l*). Liana is looped over these sticks, from one shed to another, to hold the top thatch in place.[15] This finish now is applied to all thatched roofs, including those of grass, but was not required for the older braided grass crest.

WALLS

The wall (*cerca*, fence) of the native house consists of contiguous uprights of bamboo or saplings. The former is preferred because the stalks are relatively straight, whereas the latter often are crooked and difficult to aline. Occasionally, a wall is made of split rails.

The local supply of bamboo (*tarro*, No. 180) is rapidly diminishing. There still are some handsome stands in Tajín, but families near the *fundo legal*, who need bamboo in quantity, seem to buy chiefly in adjacent Tlahuanapa. The cane is cut in November or December, at the time of the new moon, "so that it will endure; if cut in summer, it soon becomes infested with borers."[16] It is hacked off about a meter from the base; if cut too close to the root, the plant does not sprout anew.

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[15] Near Tamazunchale, S. L. P., we noted one roof similarly treated. There, however, it is more common to use a grass thatch which is braided at the crest. It also is common to invert heavy forked sticks over the ridge to hold the thatch in place.

With a machete, the stalk is chopped into three or four uniform lengths, which correspond to the height of the wall—generally, about 3 m. Formerly, these were used unsplit (*tarro rollizo*). In recent years, as a matter of economy, the canes are divided longitudinally in half, so that six to eight uprights come from a single bamboo stalk. The length to be split is laid on a wooden block and held in place with one foot. With the left hand, the machete is held firmly against the cane where it is to be opened; with a stick in the right hand, the machete is pounded until the bamboo is halved. Split bamboo (*tarro rajado*) invariably is applied with the smooth, convex surface toward the interior of the house, the split surface on the exterior (pls. 9, *d*, 11, *e*).

The current price of bamboo is about $0.15 pesos the stalk, from which six to eight split uprights are obtained. Eight to eleven of the latter are required for each *vara* of house wall. Accordingly, a house 6 by 12 *varas* takes between 300 and 400 split bamboos, derived from approximately 40 to 70 entire stalks. Below (table 12), one informant calculates 60 stalks for a house this size. We may say, roughly, that the cost of the *tarro* ranges from $5.50 to $10.50 pesos, according to the number of lengths obtained from a stalk.

Precisely the same method is used in applying either bamboo or saplings to the house frame. A couple of light, transverse poles are lashed to the exterior of the house posts—one about a meter above the ground, the other, ca. 2 meters. Ordinarily, these are horizontal, but occasionally they run at an angle (pl. 9, *b*). Sometimes there is but one transverse pole, in which case the butts of the wall uprights are stood in a shallow trench and covered with earth. This system is not favored, for the poles rot with greater rapidity. Prudent builders lay a beam of resistant wood or a row of flat stones on the ground, on which the butts of the uprights rest; in this case, two transverse supporting poles are indispensable. So laid, the life of a bamboo wall is about 20 years.

One by one, the uprights are stood against the inner side of the transverse poles and are lashed to them with liana. If there are two poles, the uprights are fastened first to the upper one; a man stands on a ladder inside the house, while an aide hands him the uprights and assists him in placing them.

The lashing would be called wrapped twine (fig. 21, *a*) if the product were a basket rather than a house; sometimes the wrapping is double fig. 21, *b*). We have watched one man work alone on a wall; he stands on the inside of the house and places the uprights in order, from right to left (counterclockwise), affixing each to the cross pole before he adds the next. However, at least two other men work in clockwise direction. If help is available, it is handy to have three men work on a wall. One brings the uprights from a great stack in the yard, selecting carefully, to compensate for the unevenness of saplings, or the joints of bamboo. A second man stands on a ladder, inside the house, while a third is on the ground, outside. As the wrapping progresses, the liana is passed back and forth between the uprights, from the worker inside, to the one on the outside.

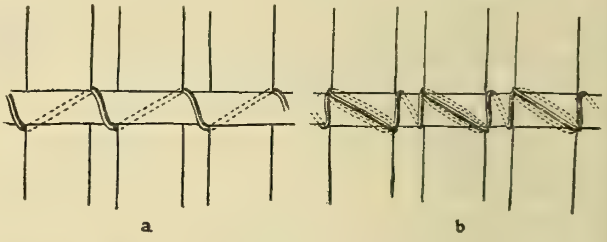

FIGURE 21.—Lashing of house wall uprights; *a*, single lashing holds the uprights to the transverse pole; *b*, double lashing. Both exterior views of wall.

It is considered unwise to affix all the uprights to the lower pole. Because of the local penchant for homicide, they usually are left free, as an emergency exit, at one spot or another along the perimeter.

Sometimes the wall of uprights is coated with mud plaster (pl. 12, *c*). The light-colored subsoil, which has a heavy lime content, is dug from a handy spot, such as one in the *fundo*, on which all the neighbors draw. It is hauled to the house in sacks or in wooden trays and dumped in a heap, in the top of which a hollow is formed. Water is poured into the depression and the paste is well mixed, usually with the feet.

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[16] Cf. p. 72. In Zapotecan Yalálag, wood and cane formerly were cut at the time of the full moon, in the belief that they would last longer (De la Fuente, p. 40).

Chopped grass is added. *Zacate colorado*—perhaps a few odd sheaves salvaged from an old roof—is placed on a block of wood and with the machete is hacked into short lengths before it is combined with the mud. When the "plaster" is of the proper consistency, the uprights are moistened, and the mixture is thrown against them with the hands. Work usually starts at the bottom of the wall. Owing to the light color of the subsoil, the resulting surface is a yellow cream; when well smoothed, the effect is very pleasing.

Some builders plaster all walls of the house, as well as interior partitions, despite the fact that this so restricts ventilation that the house is most uncomfortable during warm weather. Some plaster only the north wall, "where the cold enters." Some plaster both surfaces of the wall; others, only the interior.

DOORS

The Totonac house is windowless but is equipped with one or more doors. Seldom is a door on the end of the house; usually, it is on one of the long sides, adjacent to a main post. Ordinarily, posts are 3 *varas* apart, and, to complete the doorway, a secondary post is set in the ground, at no great depth, and is tied above to the mother beam.

The door is of bamboo splints, mounted in a bamboo frame. Unsplit bamboos form the uprights at either side. At the bottom, and sometimes at the top, the frame is finished by a half bamboo, in whose concavity are set the splints of the door (pl. 12, *a-c;* fig. 22). Transverse poles, to which the bamboo splints are lashed, may be on the interior (pl. 12, *b*, *c*), or the exterior (pl. 12, *a*) of the door; in either case, the convex surface of the splint is on the outside of the door.

The "hinge" is constructed ingeniously. One upright of the door frame fits in the concavity of a bamboo of a slightly greater diameter, which is lashed firmly to one of the posts of the doorway. The bottom of the same upright rests in a pitted stone or block of hard wood, set in the ground. With this simple equipment, the door swings freely. Sometimes—presumably to prevent warping and sagging—a few lengths of liana are looped, diagonally across the back of the door, in the form of a figure 8 (pl. 12, *c*).

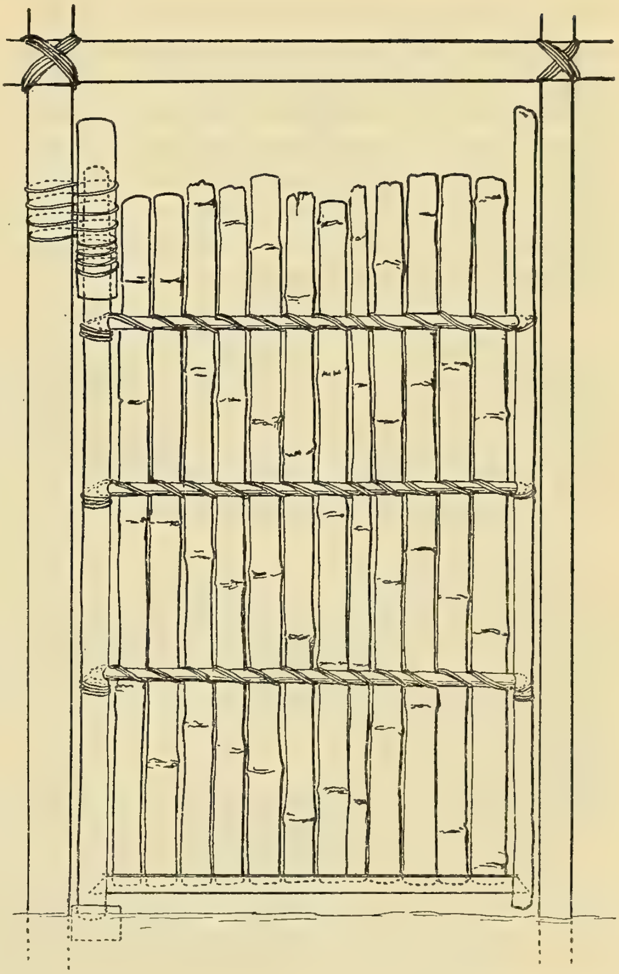

FIGURE 22.—Bamboo door. See text (p. 185) for description.

COST

If a man happens to own a considerable patch of *monte alto*, he obtains from it all the materials needed to build the native house. However, *monte alto* now is relatively scarce, and most families supplement resources from their own lands with purchased materials.

In table 12, one informant has estimated the cost of building materials for a house 6 by 12 *varas;* corrections and remarks are appended. With the possible exception of roof poles, the purchaser cuts and transports all materials, and labor is not included in the calculations.

The table shows a total of $325 pesos, which evidently is subject to considerable correction. To it must be added $14.00 for two posts and $8.00 for bamboo, both overlooked by the original informant. Moreover, there is difference of opinion with respect to roof withes, and a second informant calculates them at about $55 pesos more than the table shows. If we add these items to the total of $325, the house would cost close to $400 pesos. However, the investment may be reduced $100 pesos by the simple expedient of substituting the less desirable *palma redonda* thatch for *palma real.*

In other words, the minimum cost for a house this size, exclusive of labor, is close to $300 pesos. If *palma real* is used for roofing, the price soars $100 pesos, while *misanteca* thatch is intermediate.

TABLE 12.—*Cost of building materials* [1]

Materials	Cost in pesos	Corrections	Remarks
10 posts @ $7.00.	$70.00	$84.00	Error in calculation; a house 6×12 *varas* requires 12 posts. Those of *chijol* ca. $1.50 a *vara;* other woods somewhat cheaper.
2 mother beams @ $10.00.	20.00	--------	
13 cross beams @ $5.00.	65.00	--------	Beams usually $1.00 a *vara.*
32 roof poles @ $10.00 a dozen.	30.00	--------	Roof poles 4–5 *varas* long; another informant calculates cost at $6.00 a dozen, or $9.00 delivered.
100 roof withes	30.00	85.00	Major disagreement; another informant claims they cost $10.00 a dozen; are sold in uneven lengths.
1,000 leaves *palma real.*	100.00	--------	Apparently the usual price; one man asks 15.00 a hundred. If *palma redonda* used, 4,000 leaves @ $1.00 the thousand; total cost $4.00 instead of $100.00. *Misanteca* leaf intermediate in price. Is purchased as a lot, or by *tercio,* in this case, the latter being the quantity one can grasp in his two arms.
2 *tercios* (50 lianas each) of liana @ $5.00.	10.00	--------	
60 bamboo stalks.	--------	8.00	Overlooked by informant; cost varies from $5.50 to $10.50, dependent upon length. If saplings used, price $10.00 to $15.00 a hundred.
Total	$325.00	--------	

A house often is built on rented land. When the owner moves, he dismantles the domicile and takes with him any materials—such as posts and beams—which may be used anew. Sometimes a house is sold. Rutilio Olmos was asked $150 for a down-at-the-heel building, which he finally bought for $60 pesos; according to him, only the posts were in good condition. We ourselves purchased a smaller house, likewise in poor condition, for $30 pesos. This was considered a great bargain by the neighbors.

SUGGESTED IMPROVEMENTS

The native house has much to commend it. Above all; it is inexpensive and is constructed entirely with local materials and with local labor. Ventilation is good. Lighting is far below our standards but probably is adequate for Totonac needs. On the whole, the Totonac do little close work and none of it by night. Weaving, sewing, and general manufacture and repair of equipment usually are performed by day, often in the doorway of the dwelling. Few people read; none, as far as we know, with any regularity. Postal service is virtually nil; newspapers seldom find their way to the community; and books are few and far between. In short, Totonac lighting requirements are not the same as ours.

Obviously, the native house has a number of major disadvantages, but it would be unrealistic to suggest drastic change, for, given the current economy, the Totonac are forced automatically to make shift, as best they can, with the materials at hand. However, a few modest suggestions might be noted.

After having lived 8 months in a local dwelling, we feel that probably its greatest drawback is the earth floor. During the rainy months, this is slightly humid, and throughout the year, it manifestly is unhygenic. In our opinion, the Totonac are not good housekeepers, despite the fact that they are remarkably clean personally. It seems probable that local housekeeping would improve immeasurably if some sort of hard-surfaced floor, easily cleaned, could be installed. A stone pavement is out of the question, for stones are scarce. Concrete might be an excellent solution—but it is impractical because of the difficulty of transporting such heavy material from Papantla and because no Totonac knows how to mix or pour cement. If some sort of hard-surfaced stucco could be prepared on the basis of the calcareous subsoil, that might be a solution which would be accepted with alacrity.

The Totonac are not averse to changes in building materials. As will be seen below (pp. 187–189), there is a considerable inclination to substitute tile for the more common thatched roof, despite the fact that a relatively heavy capital investment is involved. The tile is purchased in nearby El Chote and hauled to Tajín; and, owing to its weight, it requires a much heavier house frame than does a thatched roof. However, tile is more lasting than is thatch, is somewhat cleaner, and has, moreover, a certain prestige value. It seems probable that, as economic means permit, it will find increasing favor in Tajín.

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[1] Calculated by one informant for a house 6×12 *varas.* Corrections and most remarks based on data from other informants.

In many homes, considerable discomfort results directly from the fact that domestic animals have the run of the house. Many dwellings are infested with chicken lice; and any house with pigs underfoot is likely to be generously supplied with *niguas*, which penetrate the bare feet and cause major discomfort. If the practice of using a bamboo gate on doorways were encouraged, these animal pests might be reduced considerably. Such gates are common in small towns and could be manufactured easily by the Totonac, with materials at hand.

As will be seen below, nearly half the families in Tajín sleep on woven mats spread directly on the earth floor. Some, however, use a simple platform bed, described in the succeeding section. Were the use of such beds encouraged, sleeping accommodations would be somewhat more hygienic.

In view of local conditions, any approximation to plumbing is out of the question. The outhouse is so rare in Tajín that it may be considered nonexistent. But if a sanitary, easily constructed, privy could be devised, its advantages would be obvious. However, it must be borne in mind that the surface soil is shallow and that the subsoil is hard, calcareous, and not easily penetrated with the excavating equipment found in the average house. In short, an outhouse based on deep perforation probably would not be practical.

Undoubtedly, a housing expert would recommend other and more far-reaching improvements. But to be effective, any suggested change must fit the local scene, must be based on local materials, and must fall within the capacity of local, unskilled labor. Our building materials—cement, steel, brick, and glass—are far beyond the reach of Tajín today, both literally and economically; and we must think essentially in terms of local resources.

DISTRIBUTION

We do not know how widespread is the specific type of native house found at Tajín. In framing, there are slight differences between it and a Totonac house in nearby Tulapilla.[17] The latter frame has several roof poles which do not extend from the mother beam to the ridge, but which go only part way up. Moreover, the poles of the gable end are not parallel, but radiate from the ridge.

There are noticeable differences between Tajín and an area even as close as Poza Rica and María Andrea. In the former town, the city dwellers form house walls of bamboos placed horizontally, not vertically. And on houses observed along the main road, from María Andrea to Gutiérrez Zamora, the thatch of the two long sheds of the roof overhangs at each side, so that the gable ends appear to be inset. These, and many other variations of the same basic house are only to be expected.

Of course, there are obvious resemblances between houses in the whole area from the Huasteca to the Maya, but without a detailed comparative study, it is impossible to know how fundamental are the resemblances and the differences. It may be noted that despite the excellent and detailed description of Mayan houses by Wauchope, we do not find in his monograph a precise counterpart of the typical Tajín house.

It seems likely that for any large-scale comparative study, house construction would have to be broken down into dozens, perhaps hundreds, of individual elements. But if we knew the distribution of these elements and their combination in certain areas, the results should be important historically. The strength of the apsidal house in Yucatán (Wauchope, fig. 7) and its occasional reappearance far to the north, in the Huasteca, probably are not a matter of chance.

VARIANTS

The native house still is the most popular, but a number of architectural innovations are noticeable. Quite often, the frame is made of squared timbers and supports a tiled roof (čí·ki, tile house). The walls of such a structure may be of bamboo (pl. 9, *d*) or of wooden planks (makatʌ́qʌˀ; maka, plank; tʌqʌ·ˀ, fence) (pl. 9, *f*).

Needless to say, these variants are considerably more pretentious, although one man remarks that

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[17] To judge from the photograph of a house in construction, kindly supplied by Gordon Ekholm.

"even a palm house may be well made, if the joints of the bamboo are trimmed and nicely fitted." He is building his own house with a frame of squared timbers, a tiled roof, and bamboo walls; later, he hopes to replace the latter with planks. Another friend comments that "an elegant house is of little use if it is disorderly."[18]

We paid relatively less attention to houses with tiled roofs; unfortunately there was no opportunity to witness construction of such a building. Apparently there are two principal ways of assembling the frame of squared timbers. One, considered the more ancient, has the disadvantage of leaving a sizable gap between the mother beam and the string piece (fig. 23, *a–d*), through which a thief may squirm when the house is left untended. As a consequence, the more popular construction at present involves notching posts and beams so that the string piece is alined above the mother beam, thus eliminating the unwanted opening (fig. 23, *e–i*).

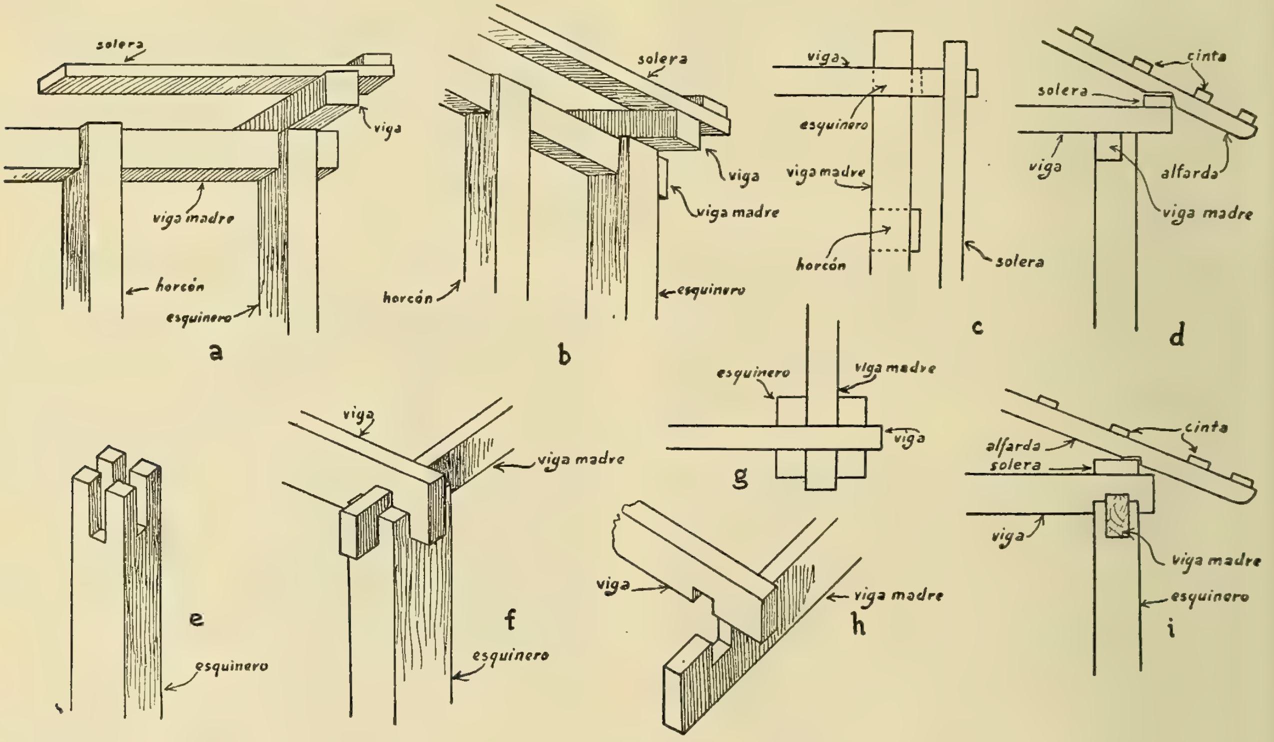

FIGURE 23.—Timber frame for house with tiled roof. Adapted from a field sketch by José Luis Lorenzo. Spanish terms are indicated. *a–d*, "Old style," which leaves an opening between the mother beam (*viga madre*) and the string piece (*solera*). Figure 24 gives elevations of such a house. *e–i*, "New style," with the above-mentioned gap eliminated.

The tiled roof is of two or four sheds (pl. 9, *f*); occasionally, an extension of one forms a corridor or porch (pl. 9, *c*); and, not infrequently, a lean-to is added. Plate 11, *e*, gives some idea of the roof construction in a dwelling of four sheds. Tiles are not available locally, but are purchased in El Chote, near Papantla. The terminal row along the gable edge, as well as that which caps the ridge (fig. 24, *c*, *d*) generally are set in "mortar" made from subsoil.

Often a house with a squared timber frame has plank doors which swing on metal hinges purchased in Papantla. In some cases, the walls are not of bamboo or saplings, but of wooden planks, laid vertically and nailed to the frame. Irrespective of roof and walls, most houses have dirt floors, surfaced with calcareous subsoil; but we have seen three tiled-roof houses with floors of square, terracotta tile.

We have no estimate of the cost of building a house with tiled roof. A 40-year old house, 12

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[18] It is noted elsewhere that the Totonac are not tidy housekeepers. The wise remark above comes from one of the very few individuals whose domicile is neat. He claims to have learned an appreciation of order years ago, from a local school teacher.

varas long, with good posts, beams, and tiles, was offered for sale at $900 pesos (the land on which it stood was not included). There were no takers, and the price was reduced to $600 pesos. At this point there was a tentative nibble, but a member of the family, who allegedly had a claim on the structure through inheritance, brought pressure to bear, and the house was withdrawn from the market.

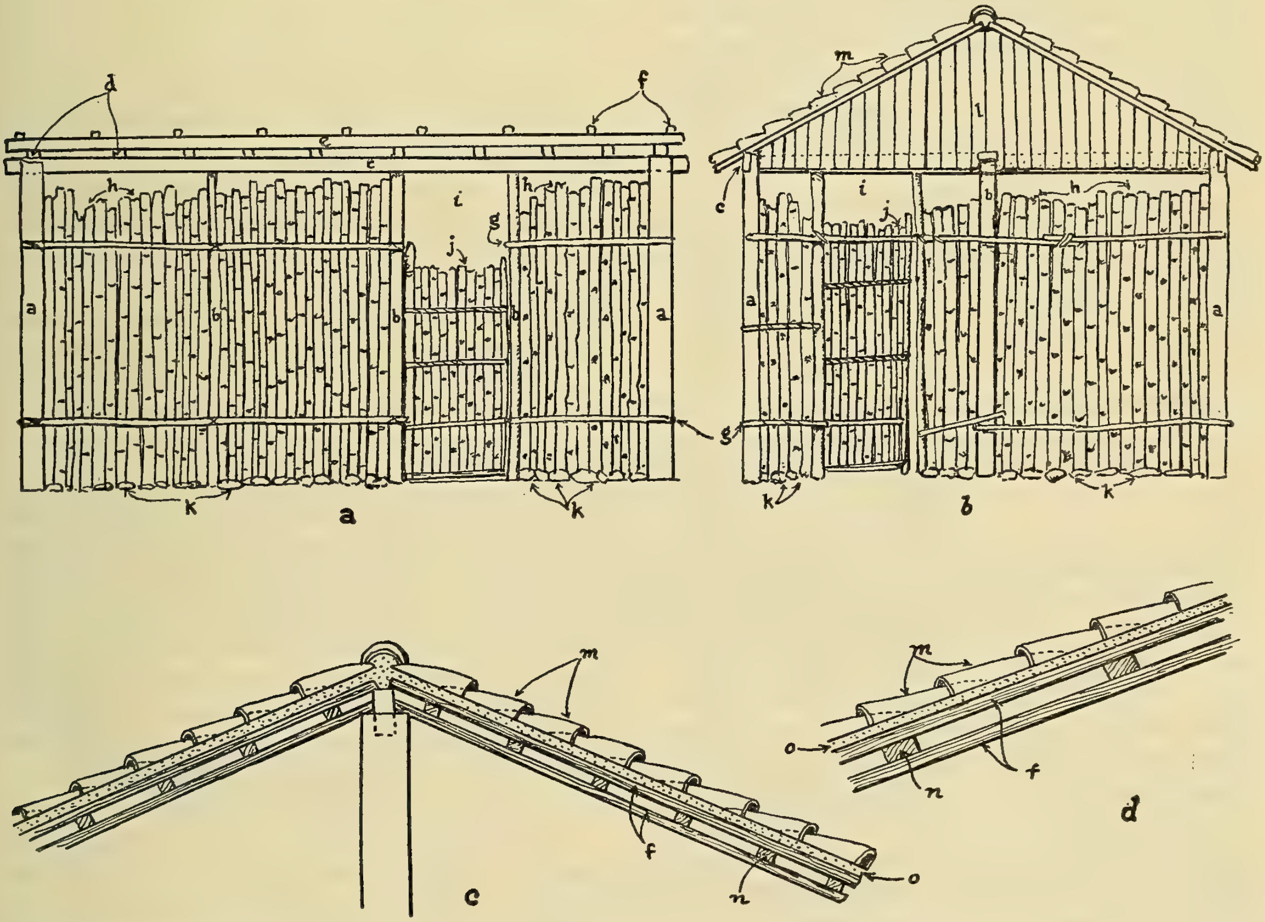

FIGURE 24.—House with tiled roof, bamboo walls. Framing details of similar house shown in figure 23, *a–d*. Adapted from a field sketch by Angel Palerm.

a, Elevation, side wall, north-south. *a,* Corner posts, squared (*esquinero,* fig. 23, *a–c*), set in ground. *b,* Supplementary posts (*horcón,* fig. 23, *a–c*). *c,* Mother beam (*viga madre,* fig. 23, *a–d*), resting in clefts cut in upper surface of *a*. *d,* Beams (*viga,* fig. 23, *a–d*), laid transversely on *c*. *e,* Timber (*solera,* fig. 23, *a–d*), laid across *d*. *f,* Roof timbers (*alfarda,* fig. 23, *d*), resting on *e*. *g,* Light poles, tied with liana to house posts. *h,* Split bamboo, lashed to *g,* to form house walls. *i,* Open space above door; in some houses covered with poles, bamboo, or planks. *j,* Door of split bamboo. *k,* Stones on which wall bamboos rest.
b, Elevation, gable end, east-west. See preceding key. *l,* Light planks, used to cover triangular area formed by gable. *m,* Tiles.
c, d, Details of roofing. *n,* Transverse roof timbers (*cinta,* fig. 23, *d*). *o,* Layer of mud plaster.

Ordinarily, a professional sawyer is required to prepare the timbers, although some builders inexpertly trim the posts with an ax. In addition to his food, a sawyer charges by the piece or by the dozen for his labor. In one case, the price was $45 pesos a dozen for beams, $6 pesos for roof *cintas* (fig. 23, *d*, *i*), $21 pesos for planks. Price varies somewhat according to the wood; *alzaprima*, for example, is more difficult to work than is cedar, and the charge consequently is higher,

Irrespective of the type of structure, today, at least, there are no ceremonial observances associated with house building. It is said that formerly a silver coin of one peso was dropped into the excavation at each corner, before the post was set in place.

UPKEEP

A house with a tiled roof requires relatively little repair, although if it has bamboo walls, they must be replaced every twenty-odd years. Occasionally, a house post needs replacing. The immediately adjacent wall is removed and an excavation made at the base of the post. In the one case observed, that of a side post, no effort was made to provide a temporary support for the beam. The excavation was opened sufficiently for the post to be lifted out. Then the hole was deepened and the bottom tamped with heavy sticks. Next, the distance from the base of the pit to the beam was measured and the new post cut to size. It was set in place and pounded to engage properly with the beam. Without further ado, the pit was filled and the wall replaced.

Mice and insects make inroads in thatch, and, from time to time, parts of the roofing are replaced (pl. 12, *d*); well-smoked thatch is less subject to such damage. Sometimes *tepehua* ants descend on a house in a body; they are allowed free entry, for they rid a roof of animal pests, including mice. The first act of a person who moves into an untenanted house is to build a fire of cornhusks, so that the resulting smudge may cause scorpions, snakes, and other animal life to withdraw.

The floor usually is surfaced with light-colored, calcareous subsoil, and after constant sweeping, it becomes uneven. Brooms are made by tying a bunch of small green branches or a sheaf of sorghum heads (No. 103) to a pole. Some housewives collect the rubbish in a large, shallow gourd; one uses an old metal shovel as a dustpan. In any case, in the course of time, the floor develops holes. It then is well sprinkled with water and allowed to dry; this is repeated several times, until the surface is more or less even. Major disparities are smoothed out with the hand.

FURNISHINGS

The Totonac home contains a very modest assortment of furnishings. As a rule, kitchen equipment includes a raised hearth, a series of bamboo or plank shelves for storing dishes, cooking utensils, and water jars, as well as one or more hanging frames on which food is kept. Every house has at least one milling stone or metate, which usually occupies a special table or frame; in the more prosperous homes, a commercial hand mill is affixed atop a post set into the ground. Occasionally, a dome-shaped oven forms part of the equipment, but this often is outside and invariably is used only on very special occasions. A few chairs or stools and a table complete kitchen furnishings.

Other household furniture may include a platform bed of split bamboo, a wooden box or a trunk for the storage of clothing and oddments, and, in most houses, a family shrine or altar.

HEARTH

The bulk of the cooking generally is done on a hearth (*brasero*), which is a platform of convenient height, built against one of the walls, or in a corner. However, *nixtamal* and atole commonly are prepared over a fire built directly on the house floor, the container supported by three inverted pots, which serve as firedogs. Both these foods usually are prepared in quantity and are contained in great pottery jars which would be troublesome to lift on and off a platform; moreover, if they were accommodated on the latter, there would be scant room for other cooking.

There is considerable variation in the hearth platform. Often the frame consists of four substantial posts set into the ground, notched at the top to receive two transverse poles, which are lashed in place with liana (fig. 25, *a*). Across these, a series of closely spaced, lighter poles or bamboo stalks is laid. On top, there may be still another layer, running in the opposite direction. A variant platform is built diagonally across the corner of the room and is supported by three instead of four posts. The upper surface of the platform, and sometimes the sides, are coated with mud plaster, prepared from calcareous subsoil (pl. 14, *a*). In one case, the top has only a thin layer of earth and ash to make it fireproof. Firewood is stored in the space beneath the platform.

Not infrequently the hearth platform is solid. Uprights are set into the ground, and against them a wall is constructed of closely spaced saplings or bamboos. These may run horizontally (fig. 25, *e*) or vertically (pl. 14, *d;* fig. 25, *d*). The zone enclosed by the fence is filled flush with earth and stones and the top plastered with mud. Usually, if not always, the solid type platform is built in a corner of the room and is bounded on two sides by the house wall.

If the top of the platform is left plane, the fire is built directly on it, and each cooking vessel is supported by three inverted pots; seldom are stones used. One family thinks that less firewood is burned if the platform has a flat top. In some cases, special provision is made for the support of the cooking vessels. Stones are placed on top of the platform to outline a U-shaped ridge (*hornilla*) or two contiguous ones (pl. 14, *a;* figs. 25, *b*, 32, *c–e*, *l*). In the latter case, one is sufficiently large to receive the flat baking plate on which tortillas are cooked; the other generally is smaller, and on it may be set a bowl or a pot in which other food is being prepared.

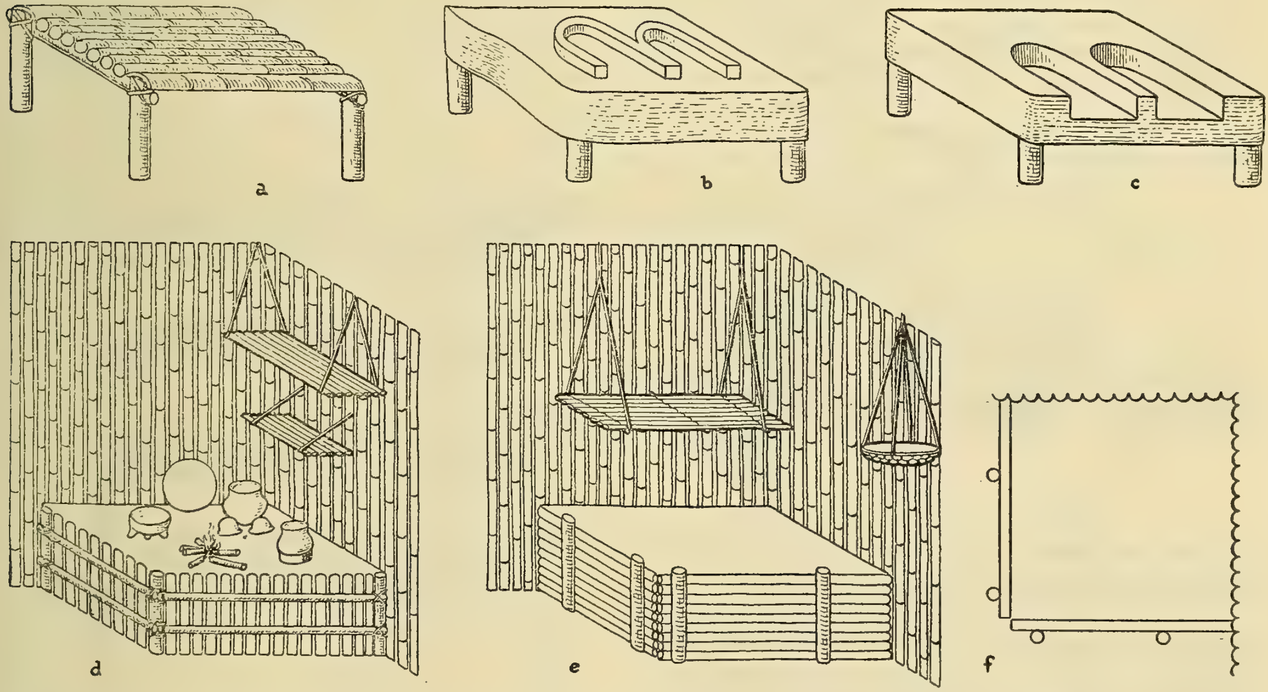

FIGURE 25.—Kitchen hearths. See text (pp. 190–191) for description. *a*, Basic frame for table type platform; *b*, *c*, table type platforms mud-plastered. *b* has raised and *c* has depressed *hornilla*. *d*, *e*, Solid platform hearths. *d* shows hearth in use. Two shelves hang above the platform. Against the back wall, a baking plate stands on edge; to its right is a clay pot supported by firedogs, which are three smaller pots, inverted; to its left, is a commercial grinding bowl. At the extreme right, a pottery vessel sits on a stand, which happens to be a metal ring. *e*, Hearth in an unoccupied house; hanging shelf and coiled frame for food storage have been abandoned along with the dwelling. *f*, Ground plan of *e*, showing arrangement of posts and transverse poles of the hearth.

Occasionally, the U-shaped rests are depressed instead of raised (fig. 25, *c*). As the earth fill nears the top, stones are arranged to outline two U-shaped areas open at the front of the platform. The fill is packed around these and the whole surface plastered with mud.

OVEN

The oven (*horno*) is a large, dome-shaped affair, built either in the kitchen or out of doors, beneath a thatched roof. Since the oven seldom is for personal use, it generally is known which houses are so equipped. In the entire community, there are 11, possibly 12 ovens. One near the *fundo legal* is used pretty regularly, 1 day a week, to make a small quantity of sweet rolls for local sale; three more in the *fundo* are used only intermittently and, in fact, two of them seem to have fallen into complete disuse. Other ovens function on special occasions only—some, exclusively for All Souls' Day. At that time, the family bakes bread for its own offering for the dead and, by previous arrangement, for that of the neighbors. Filiberta González sometimes bakes for special fiestas, the purchaser providing flour and lard in advance. A few individuals of either sex know how to make bread; most of them have learned in Papantla.

The oven stands on a platform of mud and stones, which is something under a meter in height. Ordinarily, a mason comes from Papantla to build the dome, which varies somewhat in construction.

Sometimes commercial brick, sometimes stone, is used for the circumference at the base and for the opening (fig. 26, *b*). Generally, the walls of the dome are formed entirely of mortar (*mezcla*); one local attempt to build of mud was a failure. From inspection, construction is not evident, since all ovens are heavily coated either with mud or with mortar.

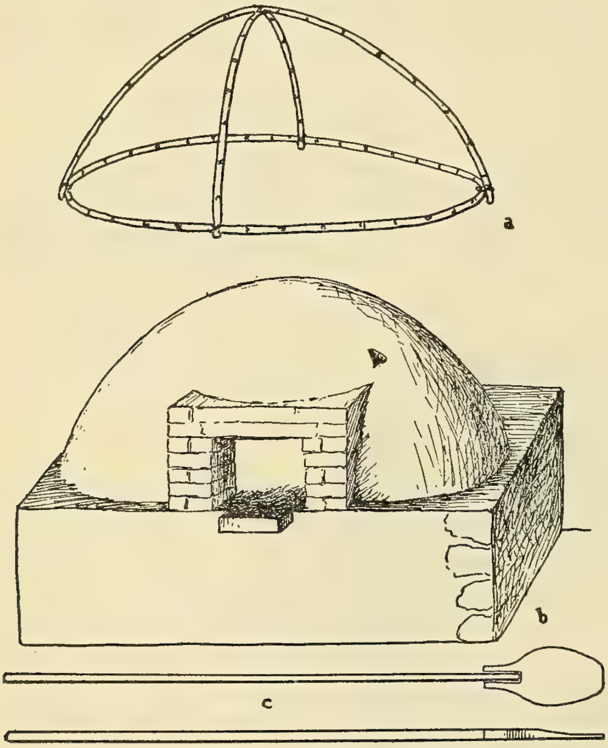

FIGURE 26.—Oven; baker's paddle. See text (pp. 191–192) for details. *a*, Frame over which dome is constructed; *b*, Finished oven, mud-plastered; not to scale. *c*, Wooden paddle (length, 3 m.) used in baking.

Two methods of forming the dome are described. One involves building a mound of earth, which then is coated with mortar. This technique is little favored because of the difficulty of removing the earth core. More frequently, a simple frame is built of three pliable poles or split bamboo (fig. 26, *a*). On top of this frame is thrown an old canvas or heavy cloth, over which the dome is built. Later, the frame is removed, or a fire is built in the cavity and the support burned.

The floor is finished after the dome has been completed. About 3 kg. of granular salt are spread evenly over the surface, "so that the bread will cook." On top of the salt, commercial brick is laid to form the floor.

To heat an oven whose dome is under a meter in height, a load (*carga*) of wood is necessary; a higher dome is impractical, for it requires more fuel. Food to be baked is arranged on a flat tin, and with a wooden paddle (fig. 26, *c*) is placed in and removed from the oven. The paddle (lima-štukan kaštilanšʌ), between 2.5 and 3 m. long, is made by a local carpenter.

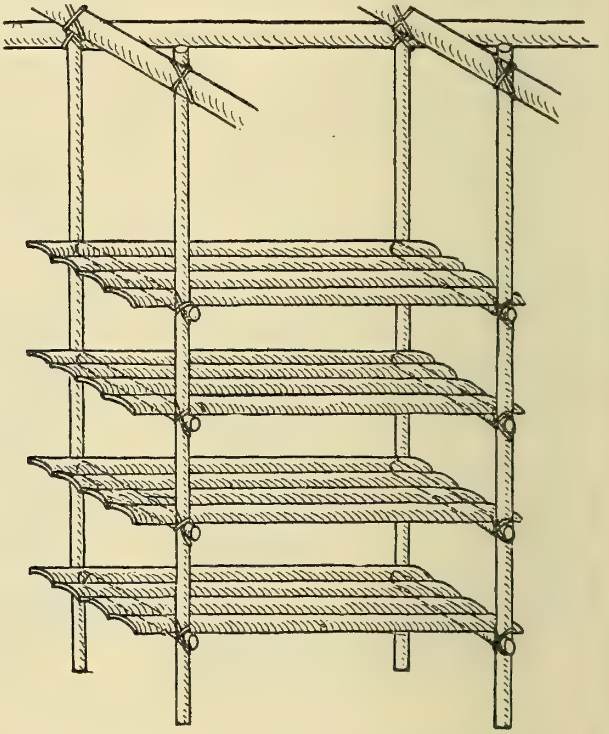

FIGURE 27.—Kitchen shelves. See text (p. 193) for details.

SHELVES, PLATFORMS, HANGING FRAMES

Storage presents a major problem in every Totonac house. Long planks or bamboos generally are laid across the house beams, thus forming an attic of sorts, in which items not in daily use are cached. Corn husks, bits of paper, gourd spoons, and other small items are stuck in the interstices between the uprights of the wall. Forked-stick hooks are suspended from the rafters or from the wall poles, and on them assorted items are hung; in various ways, other belongings are hung from the wall poles (pl. 13, *a*). Almost every house is literally strewn with odd possessions for which there is no adequate storage space. In one case, we saw a child, after a prolonged search, locate the family comb beneath the metate.

However, most houses have a certain amount of shelf space. Four or more uprights of wood or bamboo are set in pairs, in the floor of the house; their upper extremities are lashed to the cross beams. Between each pair of uprights, short transverse pieces are tied at spaced intervals, and on them, a series of planks or half bamboos runs longitudinally. The result is a series of narrow shelves (fig. 27) on which dishes, water jars, and other kitchen equipment are kept. Ordinarily such shelves are built against the house wall.

Supplementary storage space for cooking vessels sometimes is arranged outside, against the wall of the kitchen (pl. 13, *d*). Two pairs of forked sticks are set in the ground, with a crosspiece resting in the crotches of each pair. On top, saplings or bamboo rest on the transverse sticks, and on this outdoor rack, pots are stacked, mouth down. Since certain vessels are reserved for certain dishes, a large number of cookpots is used, and few kitchens have sufficient room to accommodate all.

A platform, basically similar, but more substantial, is used as a grinding table. The uprights are either forked or are notched to receive crosspieces on which planks, poles, or bamboos rest. Generally, two feet of the milling stone are on the platform; the third sits in the hollow of a large bamboo post set in the ground immediately in front of the frame, its top flush with the latter. Plate 13, *a* shows such an arrangement in a kitchen which boasts three metates.

Similarly, a table may be improvised on the basis of a forked-stick frame, if it so happens that the family does not have an ordinary table, made by a carpenter.

Most kitchens are equipped with one or more hanging shelves, swung from the rafters with liana or rope. A rectangular, swinging shelf is composed of light poles or split bamboos of uniform length (fig. 25, *d*, *e*). At either end, there is a crosspiece on the under side, to which the poles are affixed with liana, in wrapped twine stitch. Such a shelf generally is adjacent to the hearth, so that the cook may reach to it for salt, brown sugar, lard, or other ingredients.

A circular swinging frame likewise is used for food storage. A withe is bent to form a circle, which then is filled with coil without foundation (pl. 22, *d;* fig. 25, *e*). Both rectangular and circular frames may have a perforated gourd strung on the suspending cord, so that rats and mice do not have easy access to the provender.

TABLES

Most houses have a simple plank table, with four legs, either squared or turned. These are made by a carpenter, usually one who comes from Papantla for the chore. *Cedro* (No. 219) is the preferred wood. Since varnish or other protective finish seldom is applied, the top becomes greasy within a short while. From time to time, a paste of wood ash is applied to remove the worst of the spots.

A small round-top table occasionally is made with a pedestal base. The top is affixed to a four-sided block of wood. Short slats are nailed at an angle, to each of the four sides of the pedestal, so that the latter is raised above the floor on four short legs (pl. 15, *b*).

As a makeshift, any handy box is used as a table. The platform, supported by a forked-stick frame, has been mentioned above as a frequent substitute for a formal table.

STOOLS, BENCHES, CHAIRS

The Totonac do not sit on woven mats spread on the floor. They use a variety of low stools (ta·štíkat‘), now less common than in former years. Some are cylindrical, being simply short lengths cut from the trunk of a tree (pl. 20, *b*, middle foreground). Others include the section of the trunk, where the branches begin to fork. Inverted, the stumps of the branches serve as feet for the stool (fig. 28, *a*).

Somewhat more elaborate one-piece stools also are current. One is a rectangular block of cedar, hollowed slightly on the under side, so as to form four feet (fig. 28, *b*). Another is more deeply hollowed and is equipped with a handle (fig. 28, *c*). The latter form is of general utility, but is said to be especially useful when one is bathing.

Sometimes special seating provision is made for small children. A section of tree trunk may be prepared in miniature, and one little girl has her own, small-scale stool with handle (pl. 14, *c*). An inverted wooden tray provides a makeshift seat for a small child.

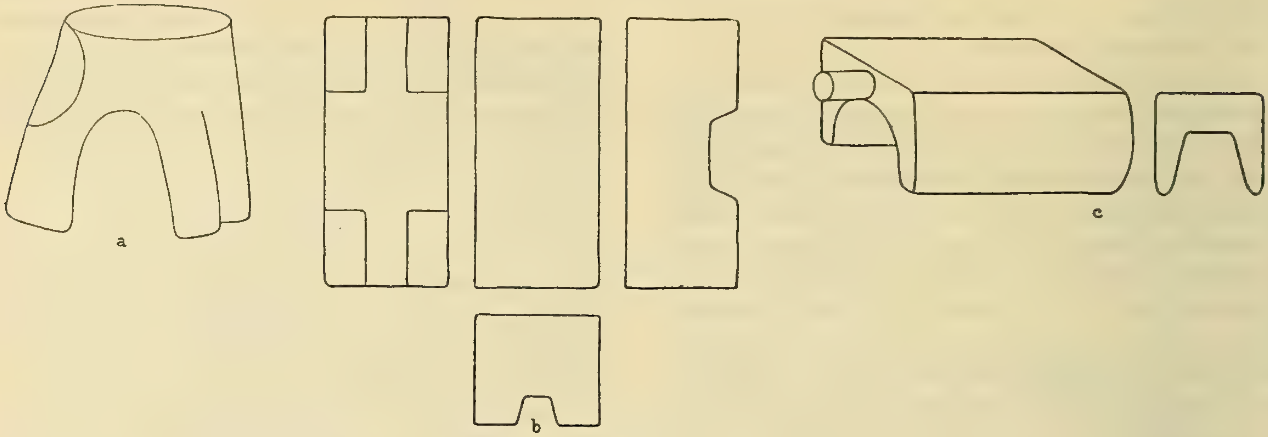

FIGURE 28.—Wooden stools; all one-piece. See text (p. 193) for details. Redrawn from field sketches; scale: 1/12 natural size.

One informant had heard that in "former times there were no chairs, only small stools," and the *banco* mentioned by Clavijero (1:303) may refer to one of the latter. In any case, it seems likely that the simple stool is an old and widespread culture element in eastern and southern Mexico and farther south.[19] However, Las Casas (p. 461) and Torquemada (1:398) speak of "chairs," and the former (p. 463), adds a somewhat confusing statement to the effect that the ancient Totonac priests used backrests of rushes.

Nowadays, long plank benches (šman ta·štíkat‘, long stool; langa ta·štíkat‘, large stool) are common. When a sawyer is cutting lumber for the house, a thick plank from the center of the cedar tree is set aside for a bench. At each end, it is perforated to receive two squared legs, which are inset at an angle (pl. 14, *f*). Similar benches, but poorly made, are reported for some of the Sierra Totonac, near Zacatlán (information from Angel Palerm).

Today, simple, straight chairs are common; they have horizontal back slats and a seat of woven palm. Eight or ten men in Tajín, not regarded as carpenters, make such chairs for their own use and, by request, for sale to neighbors. The current price is between \$3.00 and \$4.00 pesos. There are two heights: one, which we should consider normal for adults; another, which to us would be considered child's size. The latter height is the more popular, and both children and adults use these low chairs (pls. 14, *b*, 28, *e*).

The roughly hewn frame is of cedar (No. 219). Leaves of the *palma redonda* (No. 259) are spread to bleach on top of one of the trimmed *chote* trees (No. 10) usually used for drying clothing. They are exposed to sun and dew for several days, care being taken that they do not become too moist and, as a consequence, dark in color. As the seat is woven, two strips of the palm leaf are twisted slightly in the hands; as needed, a new strip is inserted into the twist. Seats sometimes are woven in simple, pleasing patterns which, unfortunately, we did not record.

Occasionally, one sees a *butaca* (no Totonac name), identical in form to one illustrated by Covarrubias (1947, p. 267, *lower right*). The frame is of cedar, and the continuous back and seat may be of thin, transverse slabs of wood, or of deerskin or canvas. This semireclining chair is much more common in Papantla than in Tajín.

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[19] The Sierra Totonac sit on "small stools made from chumps of wood" (Lombardo Toledano, p. 35), and the modern Chinantec use low stools, "often mere blocks of wood" (Bevan, p. 79). In Zapotecan Yalálag, formerly stools were made "of roots and trunks of trees" (De la Fuente, p. 44).

Although these descriptions are by no means precise, it is clear that a one-piece stool, hollowed on the under side, and sometimes handled, is of very respectable distribution. In the Chicontepec area of the Huasteca, Alfonso Medellín has seen stools similar to those of Tajín, as has Angel Palerm, in some of the Sierra Totonac villages near Zacatlán, in Puebla. Roberto Williams reports similar specimens from Santa María Tatela, in the Huatusco area of Veracruz. A photograph taken in Zapotecan Mitla shows a stool identical with those of Tajín (Parsons, pl. XLVIII*b*). Among the Popoluca, the stool may be with or without handles (Foster, 1940, p. 14); and the Maya appear to use a handleless form (Steggerda, pl. 10*c*; Wauchope, pl. 34*a*). The Lacandones do not share this culture element, but the Tzeltales are said to have such stools, handled (information from Philip Baer). Moreover, in the National Museum, in Washington, four specimens labeled "Talamanca" Indians, Costa Rica, are on display. All are one-piece, four-footed; and one has a handle in effigy form. Similar specimens are reported (Stone, fig. 7*b*, *c*) for the Boruca of Costa Rica.

MISCELLANEOUS KITCHEN EQUIPMENT

The larger items of kitchen furnishings—hearth, shelves or frames, hanging frames, tables, chairs, and benches—have been mentioned above. Naturally, the last three are not confined to the kitchen, but also are used in the living room, and occasionally in the bedroom.

Pottery appears in profusion in every kitchen. Most of it is home-made, but almost every establishment has at least one glazed bowl, for frying food, and one glazed water jar, both imports from the highlands. Pottery is discussed elsewhere (pp. 212–220), as are gourd utensils, stirring sticks, and wooden trays (pp. 209–212). Recent innovations—the metal maize mill and the kerosene lamp—likewise receive separate attention (pp. 198–199).

Wooden spoons, bought from vendors from the highlands, or from tradesmen in Papantla, are used in most households, in the preparation of food. In addition, every kitchen has a knife or so, to supplement the machete; table cutlery is almost unknown (p. 172). Some families eat food from heavy, commercial crockery; others use enameled ware; children commonly are fed from plates or bowls of home-made pottery.

In addition, every house has at least one stone metate, sometimes three, rarely more. These are of black basalt; a representative specimen measures about 75 cm. in length and 45 in width. Invariably the metate is tripod; when in use, the single foot at the rear rests in the cavity of a bamboo, which is set upright in the floor, against the grinding table (pl. 13, *a*). The three legs are of about the same height, but owing to the bamboo rest, the grinding surface is considerably inclined.

Some metates are coarse-grained; others noticeably finer. Two women insist that there is no difference whatsoever in function; both serve either to break the *nixtamal* or to reduce it to a fine paste. However, in the house of Pablo González, one metate is reserved for rough grinding; thereafter the dough is passed to one of the milling stones next in line, where it is reground. In a home which has no metal mill, dough for tortillas is prepared exclusively on the metate, being ground several times in order that it be sufficiently fine. But if there is a metal mill, the preliminary grinding takes place in it; invariably, the maize is further ground on the metate. When not in use, the milling stone is washed and stood upright on the grinding table, against the wall of the house.

The *mano*, or handstone, varies considerably. Some are the same width as the metate; others, with tapering ends, overhang a few centimeters on either side. Often, through use, the handstone is four-faceted.

Metates and *manos* are not of local manufacture. Those considered best come from the highlands and are purchased from vendors from the San Andrés area. These utensils are, however, excessively expensive. About 8 years ago, one could be purchased for $10 or $12 pesos; now $50 or even $60 is the asking price. Since a metate from the highlands is a lifetime investment, the Totonac are willing to pay a considerable sum.

Metates of similar form, reputedly from nearby Tihuatlán, are sold in Papantla stores, the price ranging from $12.00 to $20.00 pesos, according to size. However, the stone is soft, and there is little demand for these utensils. Occasionally, a milling stone found archeologically is put to use; if the handstone is lacking, a modern one is pecked until size and shape accord. In plate 13, *a* the metate on the left is from the highlands, but the other two are archeological.

Upon special occasions, chocolate is drunk, and as is usual in Mexico, it is beaten until it froths; in fact, in Tajín, sometimes only the foam is served. The wooden beater so commonly used in Mexico occasionally is seen locally; it consists of a staff, with an enlarged knob at the end, above which are one or two loose wooden rings.

However, the home-made beater is much more common. It is an ingenious device, twirled between the palms of the hands (pl. 20, *a*). There are two kinds, both with the same name (*molinillo*, išlimapupikán).

One is made from a thin wooden wand, trimmed neatly, and split at one tip by two lengthwise cuts, at right angles to one another. Into these, strips of corn husk are placed, alternately, in opposing directions. The husk is forced into the slits until the latter are filled solidly, following which the tip is tied with a narrow strip of the bark of *jonote blanco* (No. 25). The bark first is tied about the tip of the split wand; the ends are passed to the opposing side and are retied; thence back to the first side, again to be tied. One strand now is wrapped clockwise about the split, passing between the strips of husk; the other is wrapped counterclockwise. At the base of the slit, the bark strips once more are tied together. The husk is trimmed, and an effective beater awaits use (fig. 29, *a*).

The other beater is made of the *tepejilote* (No. 97). The entire plant is pulled from the ground; the roots are trimmed to even length; the whole thing is washed; and the beater (fig. 29, *b*) is ready for use.

Every kitchen is adorned with corn husks. Large bundles are stored in the space above the rafters, and a small quantity is kept at hand, stuffed in the interstices of the poles which form the kitchen wall. The dried husks have many uses. Eggs are wrapped in them (p. 92); likewise, cakes of brown sugar (pp. 103, 131); so also is seed of squash and gourd; and smoked fowl is stored in them. If one buys lard, he brings it home in a husk; meat or cracklings are wrapped in several. Moreover, if one wishes to make a gift of fruit, such as *limas*, it apparently is a delicate gesture to deliver each fruit in a corn-husk cover. In short, in the Totonac kitchen, husks take the place of our waxed paper and our wrapping paper.

Ladders are found in many houses; although their use is by no means confined to the kitchen, they may be mentioned here. One type consists of a single stalk of bamboo, simply notched; it has a deep cut immediately above each joint of the cane (fig. 30, *a*). Another consists of a bamboo stalk, with short stubs of the side branches left in place; since these are alternate, the result is a simple ladder (fig. 30, *b*). Other forms of ladders perhaps are inspired by Papantla models. One is made by perforating two bamboo stems and connecting them with a series of rungs; still another, simply by nailing crosspieces to a pair of wooden uprights.

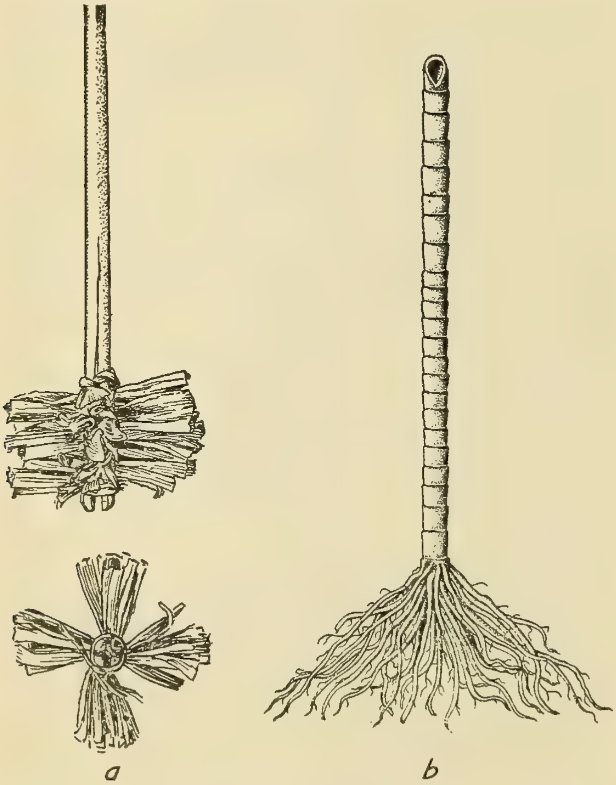

FIGURE 29.—Chocolate beaters. *a*, Short lengths of cornhusk placed in cleft stick; *b*, stem and root of *tepejilote*. See text (p. 195–196) for details. Length of *a*, 34.5 cm.; *b*, same scale.

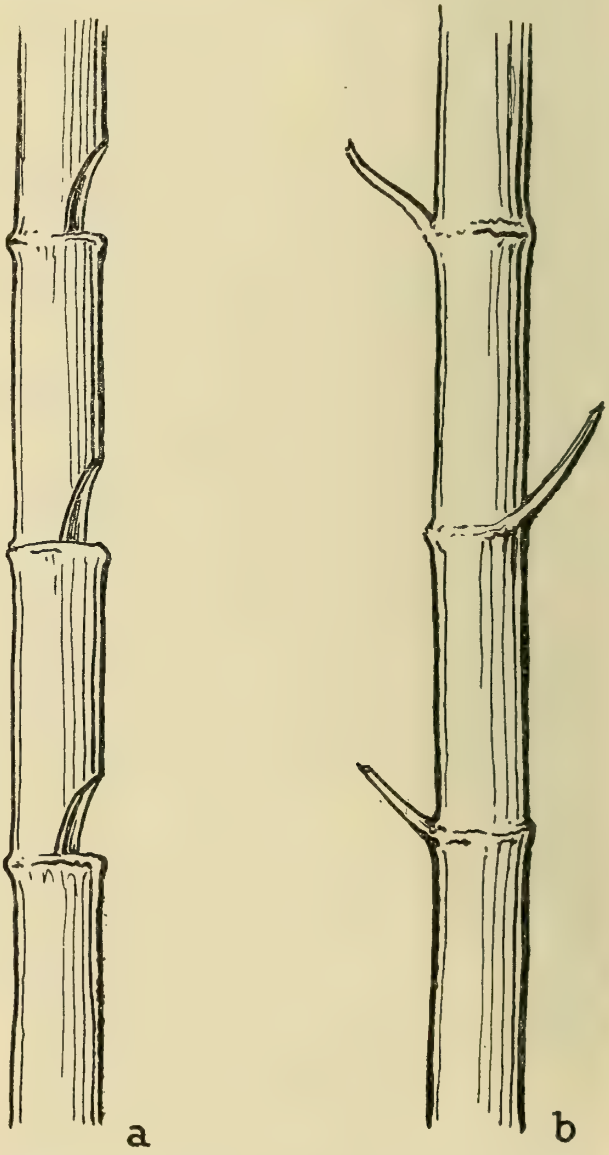

FIGURE 30.—Bamboo ladders. Redrawn from field sketches. *a*, Notched; *b*, side-branch stubs left in place. Not to scale.

SLEEPING ACCOMMODATIONS

The hammock is unknown in Tajín. As far as we know, there is but one bed with springs in the entire community, the proud possession of a prosperous merchant, Totonac, but a native of Papantla. Some of the more sophisticated families have one or more canvas cots—the canvas stretched taut between two poles which, at each end, are attached to scissorlike supports. The latter may be closed, but the lengthwise axis of the cot is stationary. Of the 39 families covered by the census, nearly half sleep exclusively on woven palm mats which are spread on the earth floor by night and which, by day, are rolled and stood in one corner of the room. A simply trestle or platform bed, described below, likewise is popular.

These sleeping facilities are found in various combinations:

	Number of families
Bed with springs	1
Canvas cots exclusively	3
Canvas cot and floor	2
Canvas cot and platform bed	2
Canvas cot, platform bed, and floor	2
Platform bed exclusively	4
Platform bed and floor	8
Floor exclusively	17
	39

The above sleeping accommodations may be arranged in order of elegance and comfort as follows: bed with springs, canvas cot, platform bed, and floor. This sequence accords very neatly with what might be called social stratigraphy within the family. If the household boasts a canvas cot, invariably it is occupied by the head of the family and his wife; the sons may sleep on a platform bed, and the daughters, on the ground. Similarly, if the trestle bed is the best the house has to offer, it is occupied by the man and his wife. Other members of the family may sleep on the floor, although sometimes the sons likewise are given trestle beds, while their sisters make shift on the floor. In all cases, first preference goes to the parents; next, to the sons. The daughters, although adult, usually sleep on the ground. One man jocosely expresses the situation thus: "The children and the lazy ones sleep on the floor."

The frame of the platform or trestle bed consists of four forked posts set into the ground, with a connecting pole on each long side. At either end, a transverse pole is added (fig. 31), and on this simple frame, are laid specially prepared lengths of bamboo:

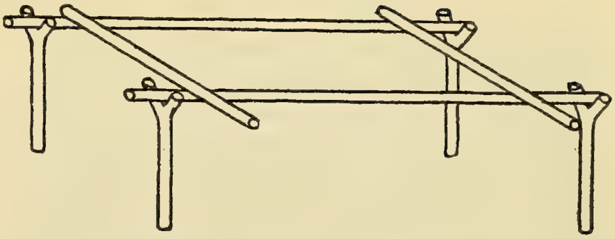

FIGURE 31.—Bed frame. Specially prepared bamboo is laid lengthwise on the trestle; see text (p. 197) for details. Not to scale.

> The unsplit bamboo stalk is cut to the length of the bed. Its joints are trimmed with the machete, so that the surface is relatively smooth. Next, the bamboo is partially shredded by being hacked lightly with the machete, but it is not broken sufficiently to part company. Finally, the machete is laid longitudinally against the shredded bamboo and is pounded with a stick, to open the stalk definitively (pl. 14, *e*). Thus severed, the bamboo is spread to form a broad, more or less flat surface—largely split, but held together at the joints. Several such lengths are laid longitudinally on the trestle.

On top of the split bamboo is spread a woven palm mat, purchased in Papantla. One woman prefers the floor to the bamboo bed because the latter "once dry, squeaks unpleasantly in the night."

A pillow is used, even if one sleeps on the ground. In one household, it is a small, cylindrical trunk of wood. More commonly, a simple bag of cotton cloth is filled with rags or with the lint of the local perennial cotton, and the open end is tied.

Bedding is definitely casual. A man uses his poncho (*jorongo*) as a cover; for the women, a good many families buy cheap, cotton blankets in Papantla; those not so equipped, use an odd grain sack as a cover.

HOUSE DECORATION; ALTARS

It is very much in vogue to hang large motion picture posters, in lurid colors, on the interior walls of the "parlor" (pl. 15, *b*, either side of altar). Usually they are hung vertically, but other arrangements, which do violence to the lettering, are not spurned. These posters are sold in the Papantla market. Highly colored pictorial wall calendars also are popular. If they are published in several sheets, the latter are hung separately. Infrequently, walls are decorated with illustrations cut from old magazines.

Aside from these ornaments, interior decoration is concentrated on the domestic shrine. As an altar, almost every house has either a table or planks resting on a trestle. The top and sides are covered with cotton cloth—sometimes in plain colors, sometimes printed. On top of the table are arranged the images of various Christian saints, usually chromos, but occasionally 3-dimensional images, the latter purchased principally from vendors who come from the Sierra de Puebla. Images sit in deep, highly varnished cedar "niches" or frames, made to order locally or in Papantla. The frames are glassed and may be ornamented with ribbons and artificial flowers. A vase or two of flowers—often well desiccated—likewise adorn the altar, and generally there are one or two home-made incense burners and candlesticks. In daily practice, the altar is a convenient spot on which to place odd paraphernalia—perhaps a bit of sewing, a gourd, turkey eggs, stumps of candles, medicines, and empty bottles. Usually, the entire assortment is covered with a fine patina of dust.

The tempting space beneath the altar does not go to waste. In it may be cached extra dishes, old bottles both empty and full, the season's supply of wild chili, cut lumber for chairs, a defunct sadiron, a scale for weighing vanilla, odd bits of wire, and assorted stone idols which have been collected in the fields. This medley is hidden from public view by the altar cloth. In one remote household, the space beneath the table must have been relatively clear, for the hostess, alarmed at our approach, took refuge there.

At the rear of the altar is the house wall, often covered by a cloth. On the three remaining sides, the altar is crowned by a canopy. A post is set in the ground at each corner of the table and, above, is tied to the rafters. A pliable sapling is arched and lashed to the two front posts, with another on each side (pl. 15, *b*). Colored tissue paper is pasted in panels to cover the area above the arch. Sometimes there are two layers of tissue paper, in contrasting color, the uppermost with an elaborate cut-out design. Commercial patterns are used, and motifs range from standard religious symbols to the Mexican eagle and a Plains Indian warrior with full headgear. In many cases, considerable ingenuity and taste are shown in altar decorations.

For special occasions the altar is elaborately ornamented with green sprays and woven palm "stars" (pl. 15, *a*) into which flowers are stuck.

MODERN INNOVATIONS

Of modern equipment, a kerosene lamp is the most frequent. It will be mentioned in greater detail in the succeeding section.

Next in frequency comes the metal mill for grinding maize. It resembles one of our metal meat choppers, but is somewhat larger and heavier. Of our 39 families of the census, 23 have metal mills for corn. A substantial post is sunk vertically into the kitchen floor, and a small square or rectangular board is nailed to its upper end, which has been trimmed flat; to the board is affixed the mill. A container, in which the ground corn is caught sits likewise on the board.

Clocks—usually cheap alarm clocks—are owned by 6 of our 39 families, accounting for a total of 8 timepieces. By no means all of them function; several we know to be archaic and out of order. Except for these privately owned clocks, Tajín has no precise way of measuring time. The school has no clock, and the teacher rings the bell at any moment convenient to her; the timing is not sufficiently accurate to serve as a measure for the families of the *fundo legal.*

Sewing machines are about as plentiful as clocks, and there is a total of 8 among our 39 families of the census. Three, incidentally, are owned by families which also boast a clock. Sewing machines, like most of the clocks, are rather ancient treadle models, apparently purchased in the days when vanilla was sold at a good price. Every woman who has access to a sewing machine is a professional seamstress, on a very modest scale. For a few cents, she will oblige a neighbor by running up a seam for her, or she will make a garment outright. Accordingly, every family possessed of a machine realizes a few pesos a year from its use.

We know of only one family which has a portable phonograph and only one with a radio. The latter runs on batteries and, as far as we know, is little used. Needless to say, it belongs to a household with strong city ties.

ILLUMINATION

There are traditions of ancient forms of illumination. The native bee seals the openings of its hive with a hard, almost black, waxlike substance, known as *atakawite* (p. 97), not to be confused with ordinary wax. In former times, this product was lighted with a coal, placed on a clay dish, and allowed to burn; no wick was necessary. "With *atakawite* the ancient ones lighted their houses; it has a nice odor as it burns."

It is said that years ago the wax of the European bee was made into a ball and burned as described above. Or, slashes were made in the trunk of the *chaca* tree (No. 228), the liquid collected, presumably allowed to solidify, and the gum burned in a clay dish.

These forms of illumination now are a thing of the past, and coal oil is burned in commercial lamps in all the houses with which we are acquainted. Kerosene lamps, with glass chimneys, are found in 13 of the 39 households of our census, and there is a total of 16 such lamps among the 13 families.

A much less elegant type of kerosene lamp is, however, far more popular. It consists of a small tin, filled with fuel. The tight-fitting cover is perforated and through it a wick emerges. There is no chimney; the lamp is virtually unbreakable, and the flame survives anything short of a really high wind. This type of lamp is quite general in rural Mexico, being used in homes, but most particularly by professional muleteers on their journeys. The lamp usually is made by a small town tinsmith from scraps and old tin cans. Every one of the 39 houses of our census has at least one such lamp, and among them there is a total of 83, or a bit more than two per ménage.

In Tajín, there are no gasoline lamps, and our popularity resulted, in large measure, from the fact that we were supplied with them. Since, under ordinary circumstances, an evening festival is literally a very dim affair, we were in considerable demand, and an invitation generally was extended jointly to us and the lamps.

Flashlights are reasonably common but by no means universal in Tajín. Candles are used in 26 of the 39 houses; but in 22 cases, it is stated specifically that their sole function is religious; "they are for the saints." From time to time, in an emergency, a candle is used to light the house, but the main reliance today is upon the little kerosene apparatus, without chimney. Fuel is bought in Papantla or, at slightly higher price, in the small stores in Tajín.

FURNITURE ARRANGEMENT

We have discussed the standard furniture equipment of the Tajín dwelling, and the accompanying sketches (figs. 32, 33) show how this furniture is arranged in a series of representative homes. The sketches show single rooms, each a separate building, although some have porches or a poultry house adjoining. In figure 34 is given the arrangement in a house which is partitioned into two rooms, with storage space and granary adjacent.

An idea of a ménage as a whole is given later, in map 9 (pp. 204–207) which indicates the various separate buildings occupied by a single family, together with furnishings and patio treatment.

SUPPLEMENTARY DOMESTIC STRUCTURES

Supplementary domestic structures include: a sweathouse, an outhouse, a granary, a shelter for pigs, a poultry house, a laundry, and odd roofs, unwalled, which protect various kinds of domestic equipment. No house boasts this entire repertoire of accessory buildings, but most have a laundry, while the other structures are far less frequent. Poultry houses have been treated previously (p. 90); as a matter of convenience, fences will be described at the end of this section.

SWEATHOUSE

The sweathouse (*temascal*, šáqa) is a popular institution in Tajín. Students in our group inspected 24, and there are at least two others which were not viewed. Four more are in ruins, one having been dismantled so that the stones could be used in building an oven. Accordingly, in recent years, there has been a minimum of 30 sweathouses in the community, and undoubtedly a few in outlying parcels have escaped our attention. It is said that formerly the sweatbath was more popular; quite generally, the older people prefer it and the younger tend to spurn it.

The sweathouse is located in the patio of the house, a short distance from the dwelling. We took no measurements, but it is said that a maximum of three bathers can be accommodated; in plate 16, *b*, the individuals give an idea of scale.

Construction varies considerably, and the description below is based on the 24 structures which were observed in some detail. Of these, half are

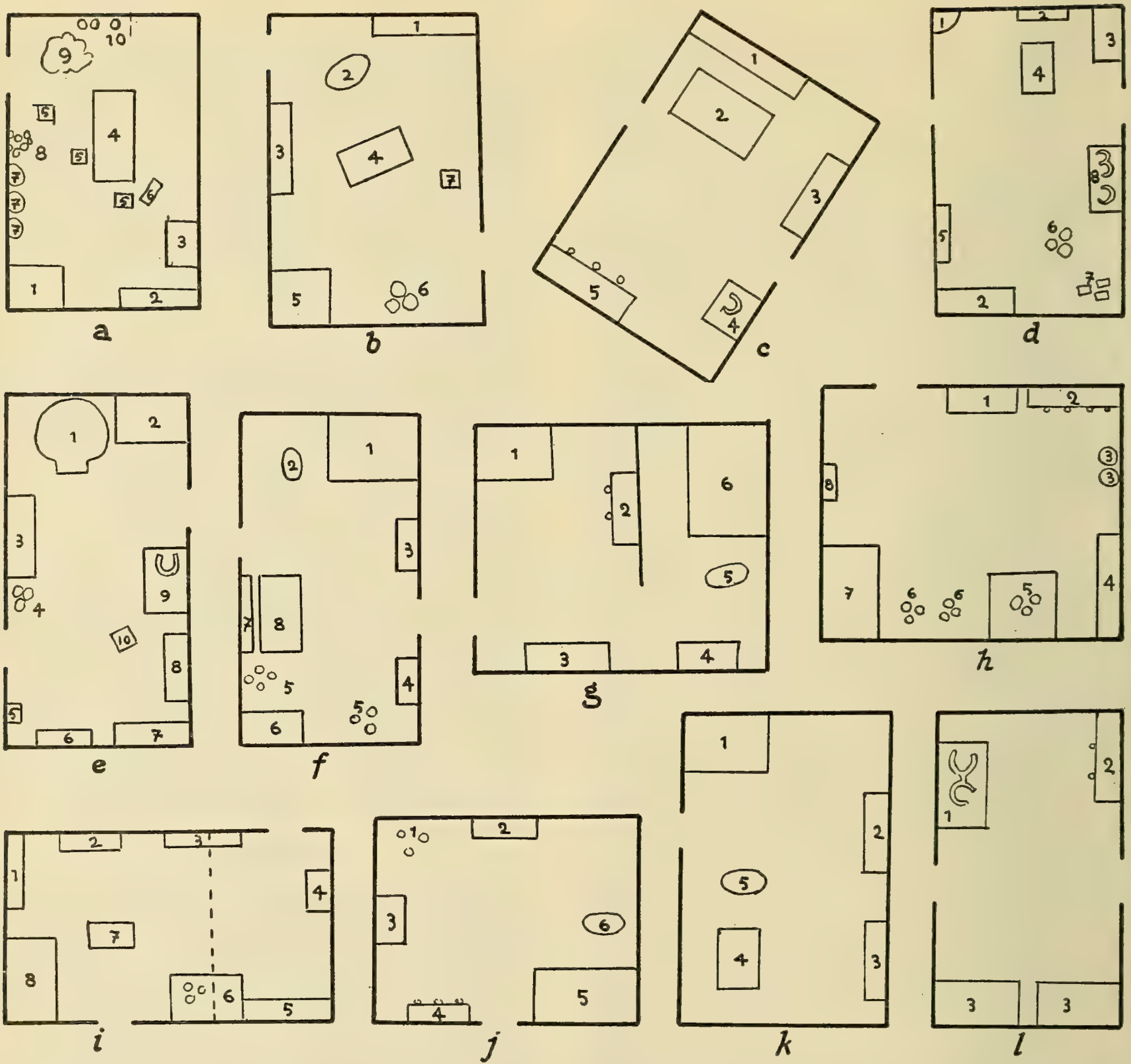

FIGURE 32.—Furniture arrangement in kitchens. *a–d*, Used exclusively for cooking; *e–l*, for cooking and sleeping. Freehand sketches, not to scale; north roughly toward top of page. Furniture indicated, exclusive of hanging shelves, which are found in virtually every kitchen.

a. 1, Raised hearth; 2, shelves; 3, grinding table; 4, table; 5, low, straight chairs; 6, wooden box containing coffee; 7, large water jars, on floor; 8, heap of calabashes, to be made into containers; 9, maize dumped on floor; 10, assorted cooking vessels on floor. Just north of 1, provisions are stored on three frames hung from the rafters.

b. 1, Shelves; 2, cradle hung from rafters; 3, grinding table; 4, table; 5, raised hearth; 6, hearth on floor, for preparing *nixtamal*, inverted jars as firedogs; 7, low, straight chair.

c. 1, Bench; 2, table; 3, shelves; 4, raised hearth; 5, grinding table, upright bamboos in front to support foot of metate.

d. 1, Sherd, forming nest for setting hen; 2, shelves; 3, frame for water jars; 4, table; 5, grinding table; 6, hearth on floor, for *nixtamal*, inverted jars as firedogs; 7, hearth on floor, stones as firedogs; 8, raised hearth.

e. 1, Oven for baking; 2, platform bed; 3, table; 4, hearth on floor; 5, post, supporting handmill; 6, frame for water jars; 7, table; 8, grinding table; 9, raised hearth; 10, low, straight chair.

f. 1, Maize crib; 2, cradle hung from rafters; parents and older children sleep on mats spread at night on floor; 3, shelves; 4, grinding table; 5, hearths on floor; 6, raised hearth; 7, bench; 8, table.

g. Room with partition: 1, Raised hearth; 2, grinding table, bamboo set in front to receive foot of each metate; 3, table; 4, frame for water jars; 5, cradle hung from rafters; 6, platform bed, occupied by three women.

h. 1, Table; 2, grinding table; 3, large water jars on floor; 4, frame for water jars; 5, raised hearth, with three inverted jars on top, as firedogs; 6, hearths on floor; 7, platform bed; 8, ancient model sewing machine.

i. To right of dotted line, poles, bamboos laid across rafters to form storage space above kitchen. 1, Table of boards resting on forked-stick frame; 2, shelves; 3, bench 4, large cane birdcage; 5, grinding table; 6, raised hearth; 7, low table; 8, platform bed; on top and beneath it, setting hens nesting in large sherds.

j. 1, Hearth on floor; 2, shelves; 3, table; 4, grinding table; 5, platform bed; 6, cradle hung from rafters.

k. 1, Raised hearth; 2, grinding table; 3, shelves; 4, table; 5, cradle hung from rafters; man and wife sleep on mats spread at night on floor.

l. 1, Raised hearth; 2, grinding table; 3, platform beds.

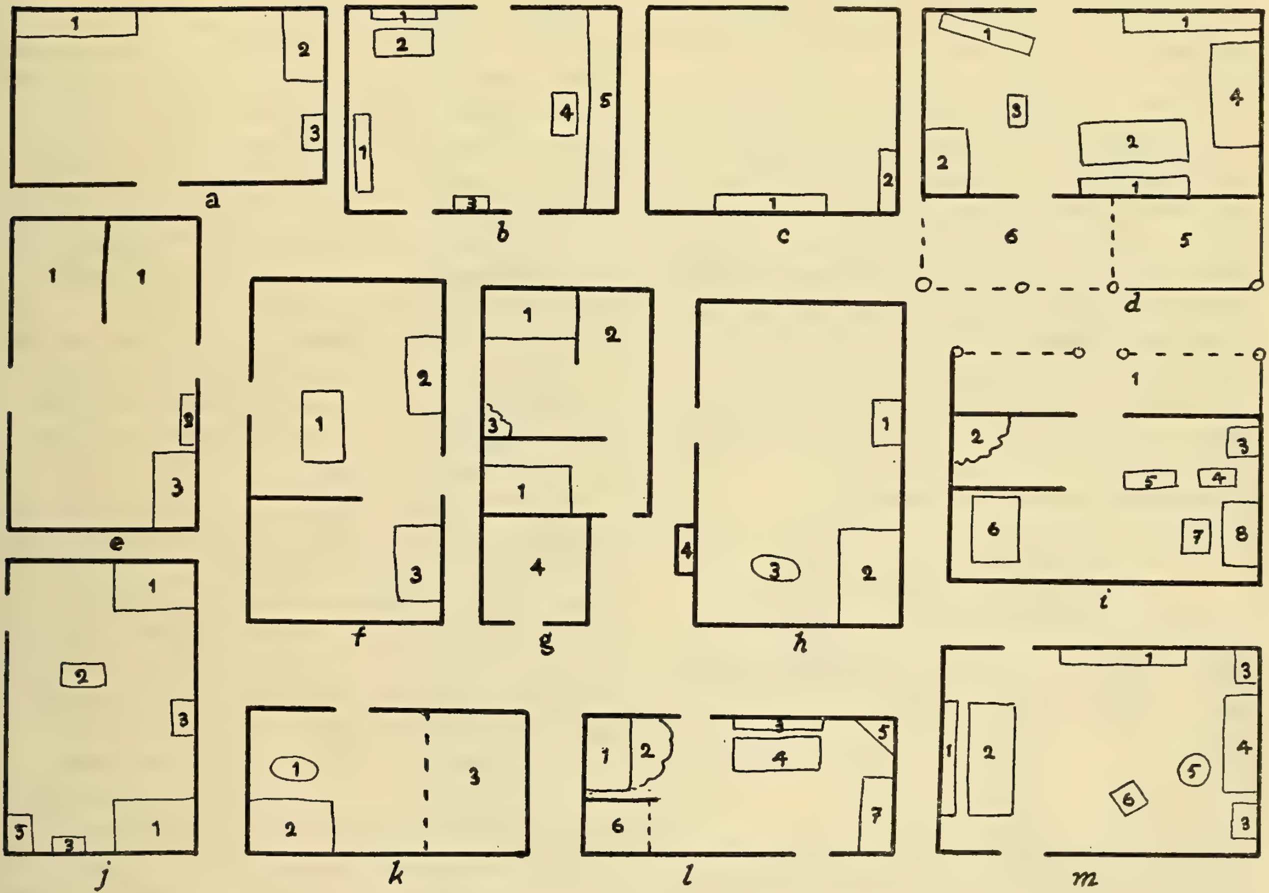

Figure 33.—Furniture arrangement in living rooms and bedrooms. *a–e*, Living rooms; *f*, *i*, *l*, *m*, living rooms and bedrooms combined; *g*, *h*, *j*, *k*, bedrooms. Freehand sketches, not to scale; north roughly toward top of page.

a. 1, Bench; 2, altar; 3, sewing machine.
b. 1, Benches; 2, table; 3, table for portable phonograph; 4, low table; 5, altar, across full width of room.
c. 1, Bench, 2, altar.
d. 1, Benches; 2, tables; 3, sewing machine; 4, altar; 5, maize crib, movable front wall; 6, porch (*corredor*), formed by extension of roof; east half occupied by maize crib.
e. 1, Maize cribs; 2, bench; 3, altar. On outside of south wall are hung several clay pots containing native bees.
f. With partition. 1, Table; 2, altar; 3, canvas cot.
g. With partition; poultry house adjoining. 1, Platform beds; 2, maize crib; 3, sherds forming nests for setting hens; 4, fowlhouse.
h. 1, Wooden chest on trestle; 2, platform bed; 3, cradle hung from rafters; 4, cane cage containing doves (*palomas*).
i. With partition and porch. 1, Open porch covered by extension of roof; 2, heap of maize on floor; 3, table; 4, sewing machine; 5, bench; 6, canvas cot; 7, low table; 8, altar.
j. 1, Platform beds; 2, sewing machine; 3, wooden chests on trestles.
k. 1, Cradle hung from rafters; 2, platform bed; 3, maize bin with movable front wall.
l. 1, Platform bed; 2, heap of maize on floor; 3, bench; 4, table; 5, diagonal compartment, wall of horizontal bamboos, filled with corncobs; 6, maize crib, movable front wall; 7, altar.
m. 1, Benches; 2, large table; 3, storage chests on trestles; 4, altar; 5, round table; 6, low, straight chair. At night, girls of family sleep on mats spread on floor

built on level ground and half have been excavated into a slope. Of the former, one is partially excavated and one fully so; thus, regardless of being on level land, they are respectively semisubterranean and subterranean. The 24 structures may be summarized thus: 11 subterranean, 3 semisubterranean, 10 surface.

Usually (17 cases) the ground plan is square or rectangular; two chambers have rounded corners; two may be described as semicircular; one is pentagonal; and for two, we have no data.

With subterranean forms, the face of the excavation constitutes the back and side walls and, in at least one case (pl. 16, *e*), the part of the front wall not occupied by the doorway. The entire front sometimes is left open as an entrance, or a rough stone wall is built across the front. Sometimes upright poles, set into the ground, sometimes planks, form the front wall of the subterranean chamber.

Semisubterranean structures have the wall above the excavation of stone masonry. In one case, the face of the trench, which forms the lower wall, has been lined with horizontal poles, to prevent collapse.

Entirely superficial structures generally are of rough masonry—stones or slabs, set in mud mortar (8 cases). One chamber has the front and back walls of stone, the side walls of upright planks. Another (pl. 16, *d*) has masonry only at the rear, while the front wall is formed by upright poles and bamboo, mud-plastered; the side walls are of heavy poles, laid horizontally, and held in place by two vertical posts at each corner.

Some sweathouses have a forked post at each corner, which supports framing poles; usually, this is not necessary if the walls are of stone. The doorway sometimes is framed by a forked post at either side, in the crotches of which a lintel rests (pl. 16, *b*). As a rule, the entrance is in the center front, but in two chambers it adjoins a side wall. Orientation is not consistent. Half the structures have the entrance to the south; others vary, but northwest and southeast are not represented. When the chamber is in use, a blanket or woven mat is hung over the doorway.

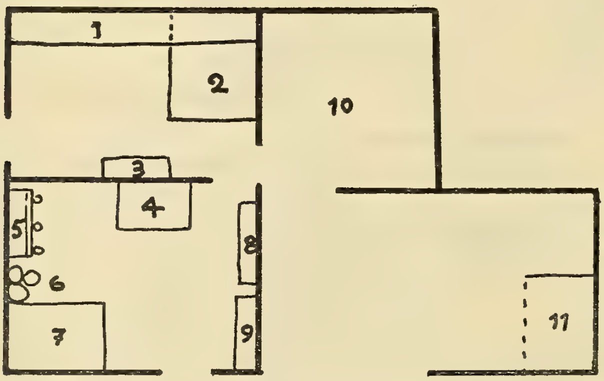

FIGURE 34.—Furniture arrangement in single house of several rooms. A partition divides the main room into bedroom and kitchen. 1, wooden plank shelf, extending full width of room, above bed (2); 2, platform bed; 3, wooden box; 4, table; 5, grinding table; 6, hearth on floor, for *nixtamal*; 7, raised hearth; 8, bench; 9, shelves; 10, storage space, vacant at the moment; used as sleeping quarters when roof of main rooms leak; 11, maize crib, sometimes used as pen for hogs.

Regardless of wall construction, the roof ordinarily is flat (20 cases); one is gabled (pl. 16, *b*); another is in the course of construction and the roof form not evident; and for three, no note was made. If there are forked posts at the corners, a transverse beam is laid in their crotches, along the top of each side wall. In many cases, however, the beam is laid directly on top of each side wall. Resting on these beams, and running at right angles, are closely spaced poles (in one instance, bamboos). The poles are covered with a layer of grass or of leaves—palm, banana, *laurel*, *misanteca* (No. 169), *pimienta* (No. 30), *estribillo* (No. 61), *palo de rosa* (No. 171). The final layer is either mud or earth, sometimes so heaped as to give a slightly convex contour (pl. 16, *e*).

A floor of loose planks, of planks and bamboo, of bamboo alone, or of poles, rests on a transverse beam laid directly on the ground, at the base of each side wall; accordingly, the wooden floor is raised a few centimeters.

Interior furnishings of the sweathouse are simple. The hearth, generally at floor level, consists of a series of stones so arranged that a fire may be built beneath. Ordinarily, the stones are supported by a couple of sizable slabs, leaned diagonally against one another to form a gable-shaped cavity for the fire; in plate 16, *c*, the slabs apparently have fallen. When the chamber is subterranean, the hearth may be inset somewhat into the earth wall. A fire is maintained for a couple of hours before the bath is to be used. By the end of that time, the stones are well heated and vapor is produced by dashing cold water on them, using half a calabash shell as a dipper. During this process, the mouth of the hearth is closed by a large sherd, so that water does not fall directly on the coals. Apart from the hearth, sweathouse equipment includes several calabash dippers and one or two clay pots for the water (pl. 16, *c*). Strewn on the floor are sprays of various plants (Nos. 2, 30, 32, 61, 68, 97, 159, 205, 207, 318) with which the body is whipped lightly during the bath.

OUTHOUSE

The outhouse is extremely rare and is confined to the *fundo legal*. The new school is provided with a casually built plank structure, allegedly an outhouse, but apparently not used. We know of only three others (map 7, lot Nos. 19, 21, 52)—one at the establishment of a non-Totonac merchant, who is a local resident; and the two others among Totonac families above average in sophistication and town contacts. In nowise can any of the structures be considered adequate or hygienic and, to all intents and purposes, Tajín is completely wanting in sanitary facilities.

monte

monte

GRANARY

By no means does every family build a separate structure to serve as a granary. Thirty-seven families store their maize as follows:

Special building	13
In the dwelling, room not specified	5
Living room	7
Bedroom	6
Living-room-bedroom combined	1
Kitchen	4
Oven	1
	37

Not infrequently, the corn is simply dumped on the floor of the house and ears removed as needed. However, it is preferable to place it on a platform raised at least a few centimeters above the ground; "otherwise, a snake may get into the maize, looking for rats." Forked sticks are sunk into the earth floor, and their crotches support a floor of closely spaced poles or halved bamboos. Ordinarily, such floors are about 25 cm. above the ground; that shown in plate 17, *d*, is higher than usual, being approximately 70 cm.

When maize is stored within the dwelling, one or more of the house walls form the walls of the crib. In plate 17, *d*, a partition which divides the house into two rooms serves as the back wall of the granary; at the far left (not visible) it is bounded by one of the main walls of the house. In this particular case, the maize has been piled neatly across the front of the "bin"—entire ears, not husked, are laid horizontally, butt ends outward. The front "wall" of the crib is formed by a double course of maize thus stacked; behind, the ears are tossed in, helter-skelter.

This technique is not usual, and the corn generally is held within the granary by a movable wall which consists of horizontal bamboos, or small poles, stacked one above the other. At each end, the horizontals are held in place between two closely spaced vertical posts set in the ground. As the supply of corn diminishes, the upper poles are removed, and the wall accordingly lowered. With such an arrangement, it is not necessary to stack the ears with care, as must be done if the whole front is open.

Even when the granary is a separate building, it still preserves most of the features described above. The walls of the hut usually form three walls of the crib, and the front wall is movable (pl. 17, *c*). Generally, the roof is thatched, with two sheds, and the walls are of split bamboo (pl. 17, *c*). Occasionally, a granary is built of squared timbers and topped with a tiled roof (pl. 17, *f*).

PIGPEN

In some cases, a shelter for a pig is indistinguishable from a granary, although the latter generally is better built (cf. pl. 17, *c*, *e*). Some families use the same hut alternately for both purposes. In any case, the doorway is closed by a series of horizontal poles or bamboos, held in place between two sets of vertical posts (pl. 17, *e*), just as is the movable wall of the granary. Sometimes, the hog shelter consists merely of a pen, covered by a thatched roof.

LAUNDRY

The laundry is an adjunct of virtually every house. It consists of a plank, or of a series of horizontal poles, supported on a forked stick frame (pl. 18, *a*, *d*, *e*). On this approximation of a table rests the large, oval, wooden tray in which actual washing is done. Nearby are the pottery jars which contain both plain and lye-water, and from which the woman dips the liquid as needed. Discarded water is thrown from the tray at any nearby point; sometimes a shallow channel is dug to carry it a short distance, since otherwise the ground becomes soggy.

The laundry table may be set up under a tree near the dwelling; if no tree provides shade, a simple roof, of one or two sheds, supported by a forked stick frame, is built over the table to give protection from sun and rain. Similar laundry facilities appear to be common in the Huasteca and probably also among the Maya (Wauchope, p. 138).

ROOFED SHELTERS

A simple thatched roof, ordinarily of two sheds, gives protection to a variety of domestic equipment. Such a roof often is built over the sweathouse or over the laundry table (pls. 16, *a*, *b*, 18, *a*, *e*). One covers the "oven" in which chili is dried; another, the "oven" over which cane juice is boiled to produce brown sugar (pl. 8, *f*). The bake oven, too, is similarly protected, provided it is in the patio of the house and not in the kitchen.

The sugar mill, of wood or of metal, invariably

tree or shrub, cultivated for fruit
other tree or shrub, not cultivated
ornamental plant, cultivated
pottery vessels
h
e
mecates
d
g
f
c
b
a
monte
monte
monte
monte
NM
0 1 2 3 4 5 m
Row of chaca trees

MAP 9.—A typical menage.
(For legend, see pp. 204–206.)

GRANARY

By no means does every family build a separate structure to serve as a granary. Thirty-seven families store their maize as follows:

Special building	13
In the dwelling, room not specified	5
Living room	7
Bedroom	6
Living-room-bedroom combined	1
Kitchen	4
Oven	1
	37

Not infrequently, the corn is simply dumped on the floor of the house and ears removed as needed. However, it is preferable to place it on a platform raised at least a few centimeters above the ground; "otherwise, a snake may get into the maize, looking for rats." Forked sticks are sunk into the earth floor, and their crotches support a floor of closely spaced poles or halved bamboos. Ordinarily, such floors are about 25 cm. above the ground; that shown in plate 17, *d*, is higher than usual, being approximately 70 cm.

When maize is stored within the dwelling, one or more of the house walls form the walls of the crib. In plate 17, *d*, a partition which divides the house into two rooms serves as the back wall of the granary; at the far left (not visible) it is bounded by one of the main walls of the house. In this particular case, the maize has been piled neatly across the front of the "bin"—entire ears, not husked, are laid horizontally, butt ends outward. The front "wall" of the crib is formed by a double course of maize thus stacked; behind, the ears are tossed in, helter-skelter.

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The sugar mill, of wood or of metal, invariably stands in the open. Because a considerable area is required for the circuit of the animal which provides traction, it is not feasible to roof the mill. When not in use, it may be covered with a scrap of sheet iron or an old mat.

FENCES

Fencing is rare, except in the *fundo legal.* Of our 39 families of the census, 11 have enclosures of one sort or another; 3 are of poles, 8 of bamboo, 1 of barbed wire. Even in the *fundo*, the entire lot seldom is fenced; although occasionally the frontage on the "street" is so treated. But by and large, in the *fundo* and on outlying parcels, fences are built to protect small garden plots from damage by animals.

A fence usually consists of a series of spaced posts set in the ground and connected by a single line of horizontal poles near the top, and another near the ground. Uprights, of light poles or bamboo splints, are lashed to the horizontals with liana, in wrapped twine stitch (pl. 18, *g*). In one case, split wood serves as the uprights (pl. 18, *f*); in another, a temporary fence has been built of crushed cane stalks, supported between two horizontal poles which are lashed to uprights.

Other fences seldom are seen. One field, near the *fundo*, is bounded by *monte* on three sides; along its open frontage is a series of posts, to which horizontal poles have been lashed; no upright fillers are used (pl. 7, *e*). This casual fencing protects the maize from passing horses and mules. A similar fence is used to form a corral for pack and riding animals, but such enclosures are rare.

Sometimes, small branches of *chaca* (No. 228) or *muite* (No. 123) are planted at spaced intervals along property lines, and, as they take root, they form a hedge.

THE MÉNAGE AS A WHOLE

Many Totonac families live in a single house, but generally all who can afford it occupy several distinct structures. The relative location of the buildings of each family of the *fundo legal* is evident in map 7, and figures 32 and 33 give a good idea of furniture arrangement in individual rooms.

However, it seems desirable to present a more complete picture, which will indicate how the various elements—buildings and furnishings—are combined. Accordingly, map 9 is a detailed sketch, to scale, of the domestic arrangements of

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Legend to map 9

A typical ménage, that of Pablo González.

Vegetation in the house clearing is numbered (see key on sketch); in the present paragraph, numbers in parentheses refer to Appendix C. Trees and shrubs, cultivated for fruit: 1, avocado; 2, guava (No. 326); 3, *lima* (probably *Citrus limetta* Risso); 4, lime; 5, orange; 6, grafted orange; 7, physic nut (No. 192); 8, banana (within fenced enclosure); 9, citron, 10, tree gourd (No. 300). Other trees and shrubs, not cultivated: 11, *zapote chico* (No. 191); 12, *capulín* (Nos. 21, 41; or 85); 13, *estribillo* (No. 61); 14, castor (*higuerilla blanca*, No. 250); 15, *moral* (No. 324); 16, tree, kind not noted. Ornamental plants, cultivated: 17, *Cuernavaca*, a shrub; 18, *flor de mayo* (No. 151); 19, mock orange (*limonaria*); 20, lilies (*lirios*); 21, rosebushes (*rosales*); 22, hibiscus (*tulipán*); 23, small flowering plants of various kinds (periwinkle, etc.). Note the number and variety of plants, mostly cultivated, which adorn the patio. Note also the abundance of clay pots, strewn here and there, and represented by an open circle, not numbered.

Structures are indicated by letter: *a*, laundry; *b*, water supply; *c*, kitchen; *d*, living room; *e*, *f*, bedrooms; *g*, hog shelter; *h*, poultry house. All buildings have earth floors.

a. Laundry (pl. 18, *e*). Four forked posts provide a frame for seven horizontal poles, which form a table top. On t is a large, oval cedar tray and a gourd, cut lengthwise, to form a dipper.

Over the laundry table is a triangular roof of *palma redonda*, resting on a frame of three forked sticks. The roof has a slight pitch and drains to the south. An empty clay jar stands at the base of one of the forked posts.

Extending east of the laundry table is a line of upright stones, set casually in the ground, to curb erosion. A similar line runs parallel, a meter or so the north. A third line extends west, from the laundry table to the kitchen, bounded on the north side by a row of lilies. Flat stepping stones run from the laundry table to the nearby enclosure where water is stored.

b. Water supply (pl. 13, *b*). A quadrilateral, not rectangular, enclosure surrounds the jars containing water. At the east end of the north wall, a break provides an entrance. The enclosure consists of a post at each corner, connected by a single horizontal bar on each side. On the inside of the latter, small upright poles are stuck in the ground, close to one another, and with liana are affixed to the bar, in wrapped twine. At the moment, the fence is in need of repair.

On the outside of the east side of the fence sits an empty clay pot. Another, on the ground within the enclosure, near the southwest corner, contains water. So also do the three clay pots in the northwest corner. They are deeply embedded in ash (represented by a wavy line), a relic of past lye-water. As the ash loses its efficacy, it is removed from the jar and thrown against the exterior, while a new mixture of ash and water is prepared.

Legend to map 9—Continued

c. Kitchen (pls. 12, *d*; 13, *a*, *c*, *d*). Walls are of upright poles; the recently repaired roof, of *palma redonda* (pl· 12, *d*). The north end of the structure is essentially a lean-to extension (indicated by a broken line), and a solid black circle in the center of the house, toward the north end, represents a supporting post. The building has two plank doors, toward the south end of the east and west walls respectively. Against the east wall, just south of the door, a vertical post has been set in the ground, outside the kitchen, and between it and the wall firewood is stacked (pl. 13, *c*).

On the out-side of the east wall of the kitchen and at right angles to it, is a table (1) of seven split bamboos, which rest on a forked stick frame (pl. 13, *d*, extreme right). On this dishes are washed. On top of the table are an inverted clay jar, a tree gourd, and two sizable pottery bowls, one containing water. On the ground, immediately to the east, is a clay jar, whose mouth is covered by a leaf of *palma redonda*. Along the south side of the table and leading from it to the kitchen door, is a series of stepping stones.

Against the outside of the east wall of the kitchen, a forked stick frame (2) supports seven long, horizontal poles, which form a shelf on which clay cooking vessels not actually in use are inverted (pl. 13, *d*). Further vessels are stored beneath the shelf, on horizontal poles, which rest on several flat stones.

Inside the kitchen, against the south wall, is a frame or stand (3) for water jars. It consists of two shelves, each of a thick cedar plank; unlike most of the frames, the supports are of dressed cedar, not of bamboo. Four glazed water jars, made in Zacatlán, and purchased locally from itinerant vendors, sit on the upper shelf. On the lower, is a clay pot, of a type presumably manufactured in Huejutla, Hidalgo, and occasionally sold in Papantla. The mouth of one jar is covered by a wooden, paddle-shaped cover (cf. fig. 37, *a*); the others, by gourds. In addition, assorted oddments—a bit of maize, some coriander, chili, and so on—are stored on the lower shelf.

The southeast corner of the kitchen is given over to a large cane cage (4) made by the son of the family; it contains doves (*palomas*), which will be eaten at some future date.

Just inside the west door is a low, straight chair (5), with seat of woven palm; beside it is a small cedar stool (not numbered) (fig. 28, *b*). A low cedar table (6) is in the center of the kitchen, just north of the doors; it is moved about at will, and when the photograph for plate 12, *d* was taken, it stood between the two doorways.

Against the east wall, just north of the door, stands a broom, represented by a black dot. On the earth floor, also against the east wall, are three hearths (7), each formed by three inverted clay pots, which function as firedogs. On these hearths, *nixtamal* is prepared; since the family is large, food is consumed in quantity. Above the middle hearth hangs a large frame (8) used for food storage; it consists of light poles, lashed to a crosspiece at each end (cf. fig. 25, *d*, *e*).

The raised hearth (9) is in the northeast corner of the kitchen. Unlike its counterparts in most houses, the supporting frame is of trimmed cedar posts. They maintain a series of closely spaced poles, covered with a thick coating of mud plaster. At the west end is a raised, horseshoe-shaped *hornilla* for the baking plate; at the opposite end, three inverted pots form a small hearth. On the floor, west of the raised hearth, and against the north wall, are two large clay jars.

A low platform table (10) consists of planks resting on a forked-stick frame; when there is no space at the main grinding table (12), this stand is used. In front, a length of bamboo (not shown) is set into the floor, its top flush with the planks, and its cavity receives the foot of a metate. A large, nearly circular, hanging frame (11) (cf. pl. 22, *d*) is swung from the rafters adjacent to this platform table.

The grinding table (12) consists of two thick cedar planks which sit on a frame of squared cedar uprights set into the floor. On it are four metates, and in front of each, an upright bamboo to receive the foot of the handmill. The grinding table appears in plate 13, *a*, but since a year has lapsed between the photograph and the sketch, kitchen furniture has been somewhat altered. In the plate, the fourth metate, at the far end, is not visible, and the auxiliary grinding table has not yet been installed. Moreover, on the floor, against the north wall, is to be seen a large cooking jar, reposing on firedogs. In addition, the photograph gives an idea of the abundance of equipment hung from the poles of the walls which, for obvious reasons, could not be indicated in a small-scale drawing.

Between the grinding table and the door is another piece of kitchen furniture (13) which, through oversight, was not identified in our notes.

On the outside of the south wall of the kitchen, three clay pots sit on the ground. A series of paving stones runs from the west door, to connect with the slab pavement along the north side of the living room (*d*). Between the latter and the kitchen is a north-south line of stones, set vertically, presumably to curb erosion from the run-off of the living room roof.

d. The living room is a separate building which also functions as a dormitory for the daughters of the family, who sleep on woven mats spread at night on the earth floor. Squared cedar posts and beams form the frame of the building; in part, the walls are of upright poles, in part of split cedar, which has been roughly worked. The butts do not rest directly on the ground, but on a series of stone slabs. With wire, these uprights are lashed to three horizontal cross poles, roughly squared. Doors are of planks; the roof is tile, with two sheds.

A stone pavement runs along the north and south walls of the living room, and odd stones have been placed on the ground at the east and west ends, where the drip from the roof falls.

Inside the living room, ample storage space is provided by cedar planks laid across the rafters. More planks (1) are piled high against the south wall, and above them a trombone is hung. Cedar cut for roof poles (2) is stacked to a height of 2 m. against the inside of the west wall. In front of it is a long cedar bench (3), with a companion table (4) of the same wood. Guests are served at this table which, at the time of our visit, harbors an assortment of belongings, including a violin and several gourd vessels. From the rafters, over the table, are festoons of dried garlic, as well as a wooden fork, which sports a straw hat, a maguey fiber shoulder bag, and a brass trumpet. On the adjacent wall are hung a quirt, another maguey bag, and several straw hats. Northwest of the cedar bench (3) is a home-made bamboo stepladder (5), hidden from view when the door is open.

Legend to map 9—Continued

Against the north wall, just east of the door, is another long cedar bench (6). Above the latter, and crossing it diagonally, is a pole suspended from the rafters. On this, clothing is hung, for, owing to the humidity, it cannot be left long in storage.

Just south of the bench (6) stands a bass viol (7), in its case. The profusion of instruments makes it scarcely necessary to explain that Don Pablo is a musician.

In the northeast corner of the room, a chest of cedar (8) rests on a trestle of slats, supported by four forked sticks set in the ground. A nineteenth-century trunk (9) reposes on a similar frame, in the southeast corner of the room. Beneath it is a defunct charcoal iron; upon another occasion (pl. 15, *b*), a wooden tray leans against the trestle. The chest and trunks are used for storage of clothing, finery, land titles, and so on.

The dominant piece of furniture against the east wall is the family altar (10) (pl. 15, *b*). It consists of a crude table of planks, resting on squared cedar uprights, and covered by a cotton cloth, printed in a red and blue all-over design. On top of the table are placed three low boxes, the flanking ones covered with white cotton cloth, the center one, with red. The latter also bears two small bunches of artificial flowers. Each box supports the image of a saint and raises it slightly above table height. The northernmost one holds a print of the Virgin of Guadalupe; the center one, a print of the Sacred Heart of Jesus; and the southernmost box, a three-dimensional figure of St. Anthony. All these images are housed in cedar shadow boxes, highly varnished.

On the main altar table, and leaning against each of the three boxes, are three framed images of the Virgin of Guadalupe. Four bouquets of mixed garden flowers, mostly mock orange, also adorn the main table. Beneath the latter, and hidden from public view by the cloth covering, are stored old bottles, both empty and full, extra dishes, and a great assortment of domestic equipment, mostly demised, and none of it in active use.

As usual, the altar is framed by a canopy. Four squared uprights are set in the ground, one at each corner of the table; their tops are tied to the rafters. Across the front, and at either side, a pliable sapling is bent to form an arch and each end is tied to one of the corner posts. Panels of colored tissue paper cover the area above the arch, and further decoration is supplied by metallic paper ornaments pasted to the tissue paper. A cut-out paper border covers the sapling, and a large paper bow conceals its junction with the posts. Immediately behind the altar, the wall is covered with a cloth; and, at each side, behind the flanking chests, lurid motion picture posters adorn the wall.

In front of the altar, and somewhat to the south, stands a round pedestal table (11). Its top is attached to a squared cedar post, to each side of which a small cedar slat has been nailed, to serve as a foot (pl. 15, *b*). The table bears a vase of garden flowers, a home-made pottery candlestick, a tree gourd containing copal incense, and a commercial *veladora* (vigil light). On the floor, beneath the table, is another charcoal iron, and to one side (not numbered in sketch), a home-made incense burner. Upon another occasion, the altar and table were photographed (pl. 15, *b*), at which time most of these items had been removed.

An empty wooden box (12) stands casually in the center of the living room, and between it and the south door are three low, straight chairs (13).

e. Southwest of the living room is a nearly square building (pl. 9, *b*), regarded as the bedroom of the sons of the family; upon occasion, it also is used for maize storage, and in it are concentrated the pottery-making activities (pl. 24, *h*) of the women. The walls are of upright poles and split rails; the door, of bamboo splints (pl. 12, *b*). In front of the latter, a stone is set flush in the ground, as a doorstep.

Inside, there is a partition formed by vertical poles, the area north of which sometimes is used as a maize crib. In the southern half of the room, a large table (1) stands diagonally, and a bench (2) is placed against the east wall. On this the eldest son sleeps, while the other boys occupy mats spread on the floor. At the time our description was written, there was no platform bed, but upon another occasion, the same room was photographed and was so equipped (pl. 24, *h*). Four pottery jars sit on the floor against the west wall; old shoes and discarded clothing also are strewn on the floor. Running diagonally from the partition to the north wall are two ropes (*mecates*) on which clothing is hung to air.

f. The "master bedroom" is, at the same time, the principal granary. Walls and door are of light, upright poles, lashed with liana. The roof, of *palma redonda*, has two long sheds and, at each end, a short one (*culata*). A few stones are on the ground in front of the entrance, and there are more along the outside of the north and west walls. Large clay jars (represented by open circles, not numbered) are liberally distributed about the exterior. Of the two inside, one, whose mouth is covered with leaves, contains a moist clay, to be used in pottery manufacture.

The furnishings are simple. The east half of the building functions as a granary (1). Forked posts are set into the ground, and poles placed in their crotches; on them rest a series of north-south poles which form the floor of the crib, a few centimeters above the ground. Its front wall is movable; others are formed by the walls of the building. Just west of the granary is a low platform bed (2). To the rafters are tied ropes on which clothing is hung. Two small pigs tethered in the southwest corner share the bedroom with Don Pablo and his wife.

g. A pig shelter stands on the southern fringes of the clearing; immediately south of it, the land dips abruptly and its slopes are *monte*-covered. Originally, the shelter consisted of a gable roof of *palma redonda*, supported on a four-post frame. Later, an extension (shown by dotted line) to the west was added by setting up additional posts, and over these a roof of single shed was built. The shelter is innocent of walls, except in the northwest corner, where there are four cribbed poles on two sides; manifestly, this is of doubtful utility for, at present, the other sides are not fenced.

h. The poultry house (pl. 17, *b*) is somewhat removed from the other buildings. It is constructed on a frame of four forked posts; walls are of upright poles, lashed to a single cross piece on each wall. The *palma redonda* roof is of a single shed and drains to the northwest. A standing wooden slab closes the entrance.

Pablo González, whose ménage probably is representative of a family in comparatively comfortable circumstances. Vegetation in the patio or house clearing is indicated, as are the various structures and their furnishings. Don Pablo has no sweathouse, no oven, and no mill for cane; but his establishment boasts a kitchen, living room, and two separate bedrooms, plus the ubiquitous laundry, and a poultry house and hog shelter. The figure is accompanied by a detailed description, in which reference is made to a number of photographs which complement the account.

The household is situated on a slight east-west hogback, in the northern half of parcel 115. To the south, there is a relatively abrupt drop, and here *monte* begins; to the north, the land slopes gently toward the family's maize and cane fields, hidden from view by a narrow strip of *monte*. The house clearing continues somewhat farther west than we have shown, where formerly were located several buildings belonging to the previous owners of the parcel. To the east, clearing and property lines coincide and are marked by a long row of handsome *chaca* trees (No. 228).

SPECIAL ARRANGEMENTS FOR FESTIVALS

From time to time, virtually every Totonac household is under obligation to receive numerous guests (p. 173). At a really large feast, a hundred guests, or even two hundred, are by no means uncommon, and the problem of preparing food for so many people is, quite obviously, a severe strain on kitchen facilities. Under ordinary circumstances, the kitchen, with its small platform hearth, its few metates and water jars, its limited number of cooking vessels and dishes, is quite inadequate, and most of the preparations are made out of doors, in the clearing adjacent to the kitchen.

We had opportunity to witness the makeshift kitchen arrangements for several festivals. An account of two, given below, will give some idea of the way in which the problem is met.

Eighty days following the death of an individual, the family ordinarily gives a large feast. We were fortunate enough to be invited to one at the house of Agustín Méndez:

> Most of the preparations have been made in the patio adjoining the kitchen on the east and north. Immediately outside the east door of the kitchen is a large copper cauldron, ordinarily used to prepare brown sugar; today, it is filled with water, so that the cooks may have an adequate supply. From time to time, several girls go to fetch more water, each carrying a jar. They cross the main patio of the house, in front of the "parlor," where the male guests are assembled; they go and return, single file, very self-consciously, without a glance to the right or the left.
>
> A few steps in front of the kitchen door, and to one side, are two very large, home-made jars, containing the *bollitos de anis* (p. 153). They rest on firedogs (pl. 19, *a*), having one large stone in common, and each vessel is further supported by two inverted clay pots. Each of the large jars is covered by a shallow gourd container, convex side up.
>
> Beyond is a table, at which several women are preparing tamales. They cut leaves for the wrapping, as needed, from nearby banana trees. Each leaf is opened at the tip and is torn down the vein, then the halves are cut in suitable lengths.
>
> A few meters to the north is a thatched roof, under which brown sugar generally is prepared. Today, the "oven" for boiling the cane juice is not in use. But a great copper cauldron is filled to the brim with tamales. It is raised above the fire by a pole thrust horizontally through its two rim handles; one end is tied securely to a post of the roof; the other rests in the fork of an upright stick, evidently set up for the occasion.
>
> Beneath the same thatched roof is a large clay pot in which the atole is being cooked. It sits on three small inverted pots, which serve as firedogs. The atole is stirred constantly with a long stick (fig. 36), and the woman in charge of this operation has her organdy skirt and her apron tucked between her knees, in the hope of not soiling them.
>
> Along the east side of the same shelter, further preparations are under way. A clay baking plate, resting on three stones, is being used to toast the *totopos* (p. 155), and along with the latter, small cakes of chocolate are being softened before they are tossed into a nearby pot, where the chocolate is being beaten with a home-made apparatus (pl. 20, *a*; fig. 29, *a*).
>
> The kitchen itself is not deserted, but it is the scene of less activity. On the grinding table along the north wall are five metates, one of which is upended and evidently has not been used. The bulk of the grinding, of course, has been completed long before the guests arrive. On the floor just inside the kitchen door is a large baking plate, on which tortillas are being cooked.
>
> The food is served principally from the thatched roof shelter where ordinarily cane juice is boiled. Not only guests are provided generously, but gift lots of food are prepared, to be sent to various houses. It is said that some is sent every family whose members attended the wake, even if none presents himself at the feast of the eightieth day. Various men leave the shelter, carrying tamales and *totopos* in fiber bags, and atole, with chocolate foam on top, in new pottery pitchers, purchased for the occasion in Papantla. One man, almost more in evidence than the host, is said to be particularly eager to assist,

because 2 years ago this family had been especially helpful when his own daughter died.

The men, and a very few of the women guests, are served in relays at a large table set in the "parlor." When these special guests have finished, the table is moved into the patio behind the kitchen, where most of the women eat—both guests and those who have come to assist with the cooking.

After they have finished eating, the women wash the dishes, rather casually, in wooden trays, scrubbing them with leaves pulled from a great spray of pulúš (No. 3) hung on the outside wall of the kitchen. One woman collects the banana leaves left from the consumed tamales and tosses them into the brush, beyond the house clearing. Another remains beneath the thatched roof all the time—for if the kettles are left unattended, the dogs are likely to sample the food. From time to time, she heaves a stone at a thin hound which ventures near. The dogs are ubiquitous, and, once in a while, a woman tosses a couple of *tamales* or odd scraps to them.

As a guess, at least 25 women are milling about in the kitchen and adjacent patio. But not all the women go through the motions of working. Some sit on a few piled logs and chat; others merely stand and watch. However, all the women of the Méndez family are active participants, as well as a considerable number of nonrelatives.

Naturally, a festival of this size requires good organization, but even so, it is surprising how well the informal cooking arrangements function. There is no confusion; food is ready on time; it is tasty; and it is well served. Of course, a considerable part of the equipment has been borrowed for the occasion. Probably some of the metates, for example, have been lent, for few families have more than three for personal use. Perhaps 25 cooking pots are involved in the preparation of the food, and some of these have been borrowed. Shortly after we arrive, one of the girls goes to the nearby house of the brother of the host and returns with an additional cooking jar. In this particular case, the copper cauldrons probably belong to the host, for he has a sugar mill and makes considerable brown sugar. But a family without a cauldron may borrow or rent one for the feast.

We also had opportunity to view cooking arrangements at the house of Mauro Pérez, when a large number of guests assembled in honor of the visiting image of St. Joseph:

As a matter of fact, several adjacent houses of different members of the Pérez family have been thrown open. In the "parlor" of Don Mauro, the saint is installed on the domestic shrine. In the kitchen, about 10 women are making tortillas; in that of his brother, Ceferino Pérez, several more are similarly engaged. The *nixtamal* has been prepared outside, in a large copper cauldron, about half way between the two kitchens. Another copper cauldron outside the door of the kitchen of Don Mauro is filled with water.

Camp fires are made in the shade of a large roof (pl. 19, *b*), erected especially for the occasion. There is a large home-made pottery pot, containing turkey *mole*, another with beans, and still another with coffee. All rest on inverted pots which function as firedogs. To one side is the copper cauldron with the *nixtamal*.

Earlier, the hostess, who is one of the few in Tajín who has an oven and who knows how to make bread, has baked. In the morning guests are served bread and coffee. At noon, they are given *mole*, beans, tortillas, and coffee. Tables have been set out of doors and here the guests eat.

Virtually all the female members of the Pérez family, as well as a great many neighbor women, assist actively. All work amiably and seem neither rushed nor dismayed by the volume of guests.

After the horde of visitors has been fed, and after the cooks have had opportunity to eat, scraps are scraped from the plates with bits of tortillas and are fed to the dogs. At least a dozen are underfoot. Dishes then are stacked. They are washed first in the water from the *nixtamal* and are rubbed vigorously with pulúš leaves, later being rinsed with clear water.

TECHNOLOGY[20]

Without doubt, the Totonac were far better artisans at the time of the Conquest than they are today. The old chronicles bear evidence not only of their skill as builders, but there is also mention of metal artifacts, stone mosaics, wood carving, fine weaving, and featherwork. Archeological finds in sixteenth-century "Cempoala" likewise attest Totonac competence, both in architecture and in ceramics (García Payón, 1949, *a*, *b*, *c*).

Today, almost every Totonac woman in Tajín is her own potter, but her ceramics are execrable. A few women, most of them elderly, still weave on the belt loom, and some of the cotton textiles are of good quality. Every man knows how to tie an assortment of knots, and a good many know how to weave simple articles, such as the palm ornaments used for altar decoration. Some braid fiber to make a carrying strap and fill wooden frames with a coil without foundation, to form cradles and hanging frames for the storage of kitchen supplies. Among them are good craftsmen with real pride in workmanship. But the fine skills which apparently characterized Totonac culture at the time of the Conquest are now a thing of the past.

WOODWORKING

There is scant mention of Totonac work in wood at the time of the Conquest, but casual references indicate that this art was not lacking. For example, there is mention of canoes near "Cempoala" (Díaz del Castillo 1:168; Solís, pp. 96–97).[21] Moreover, we know that the priests of "Cempoala" stored excess food in boxes of "thin boards" and that certain sacrificial victims carried thick staves, carved to represent snakes and different kinds of birds (Las Casas, pp. 461, 463). Since in "Cempoala" the Spaniards burned the native idols (Díaz del Castillo 1:190–191), it seems likely that they were of wood. There is specific mention of at least one wooden idol in human form (Las Casas, p. 462).

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[20] A number in parentheses following the name of a plant refers to our herbarium catalog in Appendix C.

Today, woodworking is at a minimum. The Totonac are far from expert at lumbering, despite the fact that they live in an area which formerly, at least, abounded in precious woods. It has been mentioned previously (p. 72) that very few men in Tajín are able to saw planks or beams, and that reliance is placed on itinerant workers from outside. Some thirteen or fourteen years ago, an enterprising Tajín citizen set up a little business, buying trees and selling the sawn lumber; but he relied exclusively on workmen from the highlands.

Two men in Tajín pass as carpenters, although they are primarily maize farmers. Both Totonac, one is a native of Tajín, the other, of nearby Escolín. They have a modest stock of European tools and one, at least, understands the use of a level. For the most part, the male populace at large has not the slightest notion how to manipulate a saw or a plane. All are skilled, however, in handling the machete, and with it can make a cut about as clean as that of a saw.

Local carpenters undertake to make tables, chairs, and benches. It is possible that they also make wooden storage chests, but specimens of the latter which we have seen appear to be nineteenth-century relics. Carpenters also make the crosses used as grave markers and the cedar frames, or shadow boxes (pl. 15, *b*) in which images of Christian saints are housed. One carpenter professes skill in producing saddle trees, but most Totonac feel that it is wiser to buy in Papantla. On the whole, Tajín carpentry is both poor and expensive, and it is preferable to bring in a professional from Papantla when special work is to be done.

Woodworking is not confined to those who consider themselves carpenters. Perhaps eight or ten men know how to make straight chairs with woven palm seats, and several produce, for sale, wooden mills in which cane is crushed. The latter are of hardwood and involve considerable precision, inasmuch as the cogs must engage; the current price of these mills for labor alone is $100 pesos.

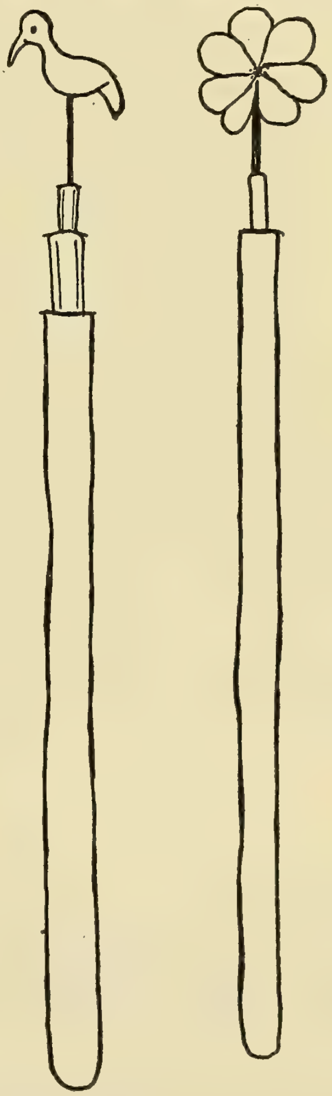

Figure 35.—Gruel paddles. Tracings of sketches drawn by Modesto González; not to scale.

A wooden paddle (*chamalote*; lí·ltɔkɔ, ˀ), usu- of *zapote chico*, is used in many kitchens for stirring maize gruel. Some sticks are relatively plain (fig. 36, *e*); others are ornamentally carved (figs. 35, 36, *a–d*). These generally are made by the individual householder, as is other simple kitchen equipment, such as a wooden cover for water jars (fig. 37, *a*), or a stand for a petroleum lamp (fig. 37, *b*). The former is cut to fit the mouth of the jar, and a short stub protrudes as a handle.

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[21] The type of canoe is not indicated, but we may guess that dugouts are involved since nearby, opposite San Juan de Ulúa, there is mention of canoes of "one piece" (Gayangos, p. 43).

More elaborate wooden articles are produced for special occasions. Either a carpenter or a nonprofessional may make the hinged wooden puppet (pl. 23) which is associated with Christmas festivities. Wooden masks (pl. 22, *a*, *c*, *e*), of cedar, are used by the various dance groups; at present, in Tajín, only Donato Santes attempts to make them. Upon request, he also produces a jointed wooden snake used by the Negrito dancers.

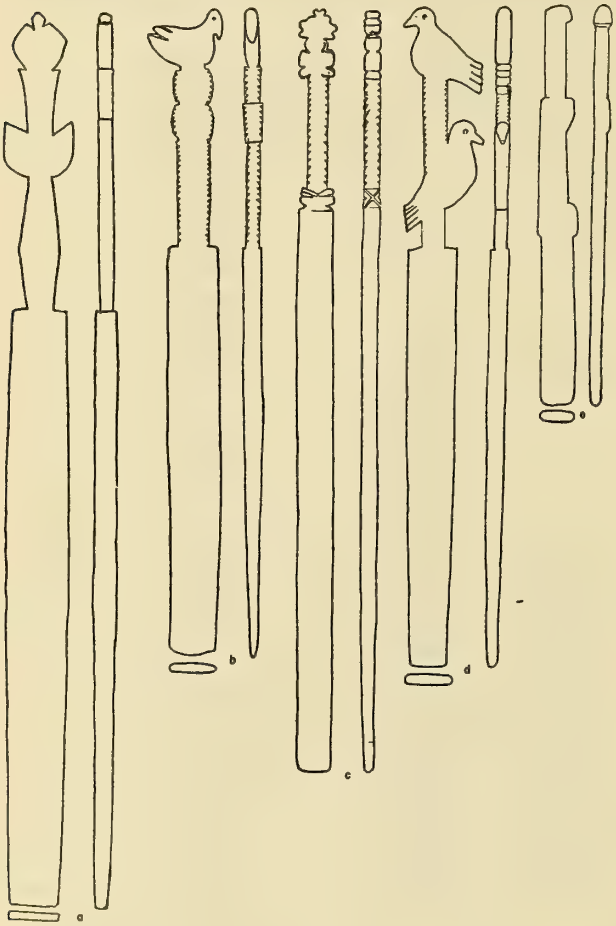

FIGURE 36.—Gruel paddles. *a*, *b*, *d*, Models made by Donato Santes; *c*, redrawn from field sketch of stirring stick used by Felipa García, likewise made by Donato Santes; *e*, used paddle purchased from Luarda García. All of *zapote chico* wood. Length of *a*, 95.5 cm.; others, same scale.

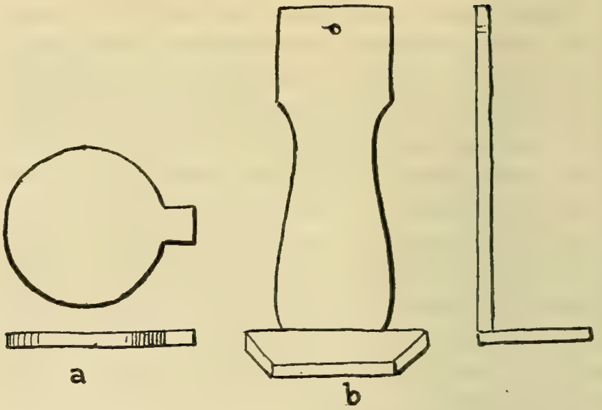

FIGURE 37.—Wooden pot cover, lamp stand. Both from wood of commercial boxes. *a*, Sketched in the house of Lorenzo Xochigua; *b*, in house of Augustina Méndez. Not to scale.

Every household has a series of wooden trays (*bateas*). A large oval one (fig. 38) is used in laundering; a smaller, circular one (pl. 21, *a*, *b*) has many uses, but most often is the container in which the Totonac woman carries burdens on her head. To us, the circular trays appear to be roughly the same size, and some claim that all have a capacity of 12 liters; however, others say that size varies.

Cedar (No. 219) is preferred for these trays. Occasionally, one is made of *frijollo* (No. 193); and some are of mahogany (No. 194), "but they are no good. They retain the moisture and never dry; they are heavy and of little use." Now that cedar is scarce in Tajín, few trays are manufactured there. The supply comes chiefly from other settlements, where *monte alto* still is abundant—Plan de Hidalgo, Plan de Palmar, Furbero, Jorge Cerdán, and other small communities to the west. We met one man from Agua Fría, en route to Papantla, where he expected to find a ready market for an assortment of trays with which he had two pack animals loaded.

Apparently anyone who has the necessary wood is considered competent to make a tray. The tree is felled and a block the necessary size is hacked from the lower part of the trunk. A sizeable cedar may yield three or four circular trays; for the larger oval *batea*, a tree with a diameter of at least 24 inches is required. One of the local carpenters says that for a circular tray he uses a compass; a straight adz, to shape the exterior; and a curved adz for the interior.

The oval tray is unadorned (fig. 38) and is simply gouged out of the block of wood. Circular trays are of two kinds: shell (*concha*) and ribbed (*de costilla*). The former (pl. 21, *a*, *b*) has a smooth surface; the latter, vertical channels, cut with a chisel, at spaced intervals on the exterior wall, sometimes with corresponding ridges on the interior.

Some of the ribbed trays have half the rim cut away, so that the surface is in two levels; decorative notching of such a rim is common. It is said that formerly even the oval tray had a "double" rim, because it is less likely to crack with use.

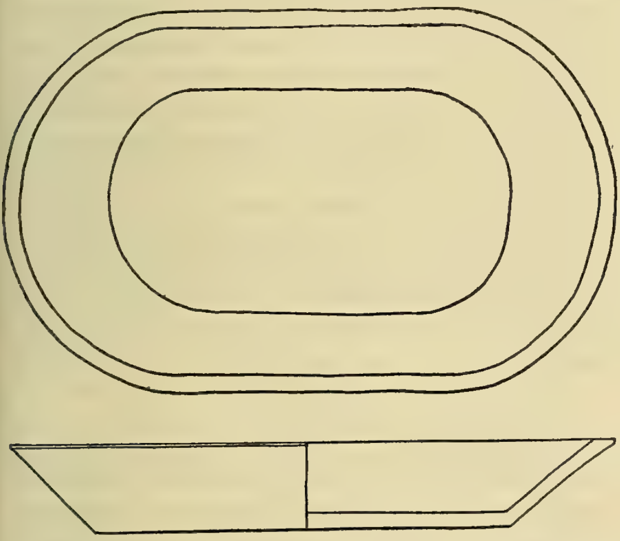

FIGURE 38.—Cedar laundry tray. Made in Agua Fría, for sale in Papantla. Long diameter, 80 cm.

Painted decoration is confined to circular trays. Occasionally, someone in Tajín tries his hand, but most trays are taken to Papantla, to be painted by one Luciano Cano, a native of Chicontepec. He is a job printer and, on the side, does a sprightly business decorating trays and calabashes for the Totonac trade. With cheap oil paint, he coats the exterior with red or orange, and over that, applies gay, polychrome designs. The Totonac provides the tray and Don Luciano, the paint and the labor; his current charge is $8.00 pesos.

A painted tray figures prominently among the wedding gifts which the bride's parents request from the family of the groom. Such trays are cherished, and in the course of 8 months in Tajín, we were able to purchase only two specimens.

A container similar to the trays, in that it is excavated from a single block of wood, seems to have been current in former times. We have seen three fragments, called *canoas*. They are large, deep, and oval; at least one had a lug at either end. Use seems to have varied. One is said to have caught the juice from the sugarcane, as the latter went through the mill; another is said formerly to have been used in making some kind of "wine"; and the third contained salt for cattle, in the days when Tajín was supplied with stock. Its owner, however, came originally from Hidalgo, and informants believe he introduced the idea of using a wooden dugout for salt.

Another wooden artifact, now no longer to be seen, is an ox yoke, used in crushing cane. We saw one rotted fragment but do not know how general was the use of the yoke or, for that matter the use of oxen with the sugar mill.

A modern touch is provided by the manufacture of baseball bats. Some years ago, two brothers, who are not carpenters, started to make bats for sale, using the wood of the *chote*, *palo de rosa*, or *palo blanco* (Nos. 10, 171, 342). Their first products, based on a model manufactured in the United States, were shaped with a machete and a plane. Later, a professional carpenter from outside, engaged to install shutters in the Tajín school, assisted them in setting up a lathe. They still produce bats on a small scale and have sold them for $8.00 pesos apiece in Poza Rica, Poza Larga, and Papantla; they speak of looking for a market in Mexico City.

GOURDS AND CALABASHES

We have found no early reference to decorated gourds or calabashes among the Totonac, although Mexican sources suggest that such manufactures were current in the nearby Huasteca. There is, for example, one mention of a yellow material with which "they anoint and dye gourds (*jícaras*)"; and upon another occasion, the vanquished Huasteca offered the Mexicans "large worked gourds" (*xicaras grandes labradas*) (Tezozomoc, pp. 110, 296). In any case, there is no evidence of lacquer or near-lacquer as a native craft among the Totonac, although possibly the trays and calabashes, now painted in Papantla for Totonac trade, may represent a weak and altered survival of an old art.

The fruit of both the cultivated gourd vine (p. 137) and the calabash tree (no. 300) is used extensively in Tajín, following very simple preparation.

A gourd is picked green and is allowed to dry before it is cut to form the desired receptacle. The vine produces fruit of three forms (p. 137). One, banjo-shaped, is divided longitudinally with a knife, and two large spoons or dippers result. The elongated, necked form sometimes is used as a water container. A cut is made at the top, near the peduncle; water and small stones are dropped in; and the fruit is shaken violently. This treatment is repeated several times, until the water runs clear, following which the vessel is ready for use. A globular fruit may be cut transversely, to form a plate or open bowl. Such gourds are general utility containers in every Totonac kitchen; often, they also function as pot covers. With the section adjacent to the stem sliced off, the globular gourd forms a receptacle in which hot tortillas are served. A gourd of similar shape, with a hole hacked in one side, and with two perforations for suspension from the waist, is used to collect weeds in the milpa. Formerly, seed for planting was carried to the field in such a container. In no case is the fruit of the gourd vine decorated.

Some calabash trees produce globular fruit, some, elongated. The former is cut transversely in half. At times the flesh is allowed to rot; at times it is not removed, and the half fruit is boiled at once, then exposed to night dew to bleach. The half calabash is an extremely useful bit of kitchen equipment; it is particularly favored for dipping liquids, since it is much more durable than is the gourd.

Sometimes water is carried to the fields in a calabash. A cut is made near the stem, and with a small stick the seeds and flesh are extracted, after which the shell is boiled. A corncob serves as a cork, and the receptacle (known as ¢úyuyu) is carried in a maguey fiber shoulder bag. The elongated fruit receives similar treatment when destined as a water container. More often, it is simply cut lengthwise and each half used as a dipper.

The prepared half shell of the globular calabash sometimes is taken to Papantla to be ornamented, as is the wooden tray (p. 211). Both surfaces are covered with commercial red paint, and on the convex side, is added a floral or bird design in polychrome (pl. 21, *c*). Like the tray, the painted calabash is one of the gifts usually stipulated by the bride's family. It is far less useful than is the tray, and generally is stored among minor household treasures, to be extracted upon special occasions and used as a drinking cup.

In addition to local products, lacquered calabashes quite often are brought to Papantla, for sale to townspeople and to the Totonac. Concerning their provenience, there is considerable confusion. Some evidently are outright Olinalá (Guerrero) lacquered and painted products; others (pl. 21, *d*) are similar, yet not entirely typical in decoration. It is believed locally that these lacquered calabashes are "from the State of Puebla." Perhaps this is because they pass through the hands of various middlemen before they reach Papantla; or perhaps because the vendors simply are not interested in divulging the provenience of their wares. We know of no center in Puebla where Olinalá-type lacquer is manufactured, although Daniel Rubín de la Borbolla tells us that he has heard such copies are being produced in Cholula and a nearby settlement.

CERAMICS

Virtually every woman in Tajín is her own potter, and every household is strewn with a large assortment of home-made vessels and fragments (in map 9, note the number of pots standing in the house clearing).

The range in shape is not very great, but a fairly large number of vessels is in use, many of which have specified functions (see below). As a guess, each household probably has about 20 different pottery vessels in daily use, as well as a number of special forms, such as incense burners and candlesticks, which see service less frequently.

Without exception, Tajín pottery is heavy and crude. It is poorly fashioned, poorly finished, and poorly fired. The color of a single specimen may range from ocher and rosy tan to brown, gray, and black; firing clouds are prominent, since the ware is baked in an open blaze. All vessels are unglazed. Decoration is scanty and is confined chiefly to incense burners and candlesticks; painted ornament is extremely rare. Warping and cracking are the rule, and quite often a new vessel must be mended before it can be put to use. Cracks are smeared with a paste made by mixing lime with the liquid drained from the *nixtamal* and with the scum from boiling cane sirup. High breakage often is attributed to the fact that a pregnant woman visited the house while the clay vessels were drying. If small girls touch an unidentified plant known as *cascabel*, "when they are grown, they will break every pottery vessel that comes to their hands."

It seems likely that in former times local pottery was of better quality than it is today. A water jar, made by the mother, now deceased, of Pablo González, is noticeably superior to any ware manufactured at present. Moreover, it is said that some decades ago, water jars were produced locally in quantity and were carried to nearby Coatzintla for sale. Unless the quality were infinitely better than it is today, it seems almost certain that there would have been no outside market.

By no means does the Tajín housewife depend exclusively on her own ceramic products. Nowadays, water jars are so heavy that they are used only for storage, and no woman attempts to haul water in a vessel of her own manufacture, if she can possibly avoid it. For carrying water, virtually all families rely on lightweight glazed jars (fig. 39), most of which seem to be manufactured commercially in the Zacatlán area of the Sierra de Puebla. Generally, these are bought from itinerant traders from the highlands; sometimes they are obtainable in Papantla. Moreover, an unglazed jar, with cream slip and a band of geometric design in maroon, occasionally is used in Tajín, as a water container. Apparently from Huejutla, Hidalgo, this type of jar has a very wide distribution and appears to be marketed from Tamazunchale to Tuxpan, and, on rare occasions, in Papantla.

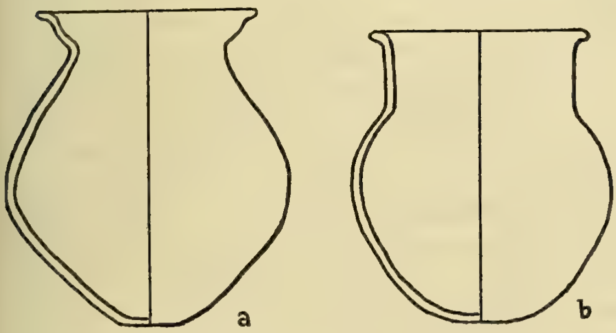

FIGURE 39.—Glazed water jars. *a*, From area of Zacatlán, Puebla; *b*, thought to be from Jalacingo, Veracruz (*sic*). Scale: ⅛ natural size.

Most families try to possess one or more shallow bowls, with interior glaze, for frying. Such vessels are available in Papantla, but the ware sold there, allegedly from Hidalgo, is said not to be durable. Glazed bowls from Zacatlán are greatly preferred, and vendors from the Sierra de Puebla find a ready market in Tajín. The first time such a bowl is used, either "maize gruel or new beans should be cooked in it; if fat is used at once, later the vessel will absorb grease, and the food will stick."

Although local wares cannot compare in quality with the imported products, there seems to be a real ceramic tradition in Tajín. Despite the poor quality of the output, women take great pains and considerable pride in their work. And every woman seems to set considerable store on her household pottery—perhaps because it is something which belongs definitely to her. In one case, a man abandoned his legal wife, to live with a younger woman, and the outraged spouse came to the house when nobody was home and broke all the dishes and cooking ware. This particular indignity was mentioned frequently by both the younger woman and by the neighbors.

A girl learns to make pottery by watching her mother, aunts, or grandmother. María Loreto, who lived in Talaxca as a child, started by making small bowls from balls of clay. Her mother encouraged her to use her imagination, telling her to fashion the vessels "as they came to her head." One adolescent boy enjoys playing with clay and occasionally makes a bowl or little figures (fig. 40).

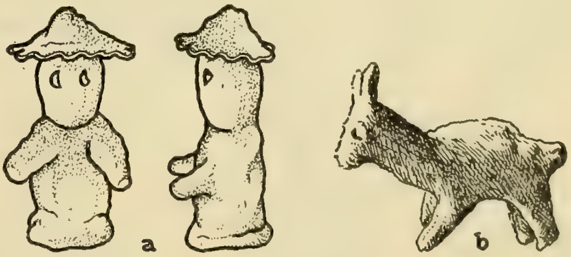

FIGURE 40.—Clay toys. Made by 14-year-old Pedro García. The hat of *a* is removable; originally, both specimens had black beans stuck in the clay to form eyes; these were destroyed in the course of firing. Height of *a*, 11.5 cm.; *b*, same scale.

His friends and relatives smirk indulgently but are not concerned by his dabbling in an essentially feminine art.

Despite the fact that every woman knows how to make pottery, some have better luck than others and some have more free time, hence there is a certain amount of specialization. If one housewife is "too busy," she may ask a friend, who prides herself on her baking plates, to sell her one or two. Or another friend, thought to make good water jars, will be asked to make an extra one for sale. Prices are moderate; in fact, the cost of a large jar is hardly sufficient to pay for the wood used in firing.

Pottery making in Tajín is a seasonal activity. During the spring drought, the clay is hard and thus difficult to dig. Often a woman lays in an extra supply, which she stores in large jars until needed. Moreover, the spring may be hot and windy, so that the vessels dry too rapidly. "They should be barely dry, and no more, or they crack. And if the wind strikes them, they warp." Accordingly, it is preferable to concentrate ceramic activities between All Souls' Day and mid-March. As the latter date approaches, there is a great flurry of pottery making, so that the household may be fully stocked before the deadline.

VESSEL FORMS

Local products include jars (*ollas;* λámank) of various shapes and sizes (fig. 41). Those with concave base, made to fit the head (fig. 41, *h*), receive a special name (sáuwat) ; they are scarcely manufactured today, and lighter weight commercial jars, chiefly from Zacatlán (fig. 39), have replaced them.

Every household is well supplied with homemade pottery jars. Ana Méndez believes it indispensable to have one devoted exclusively to each of the following: (*a*) storing drinking water; (*b*) making coffee; (*c*) making maize gruel; (*d*) preparing *nixtamal;* (*e*) making tamales; (f) cooking beans; (*g*) heating bath water. In addition (*h*), several jars contain the water used for laundry and bathing and (*i*) others are used for odd storage, such as sand or clay for pottery making.

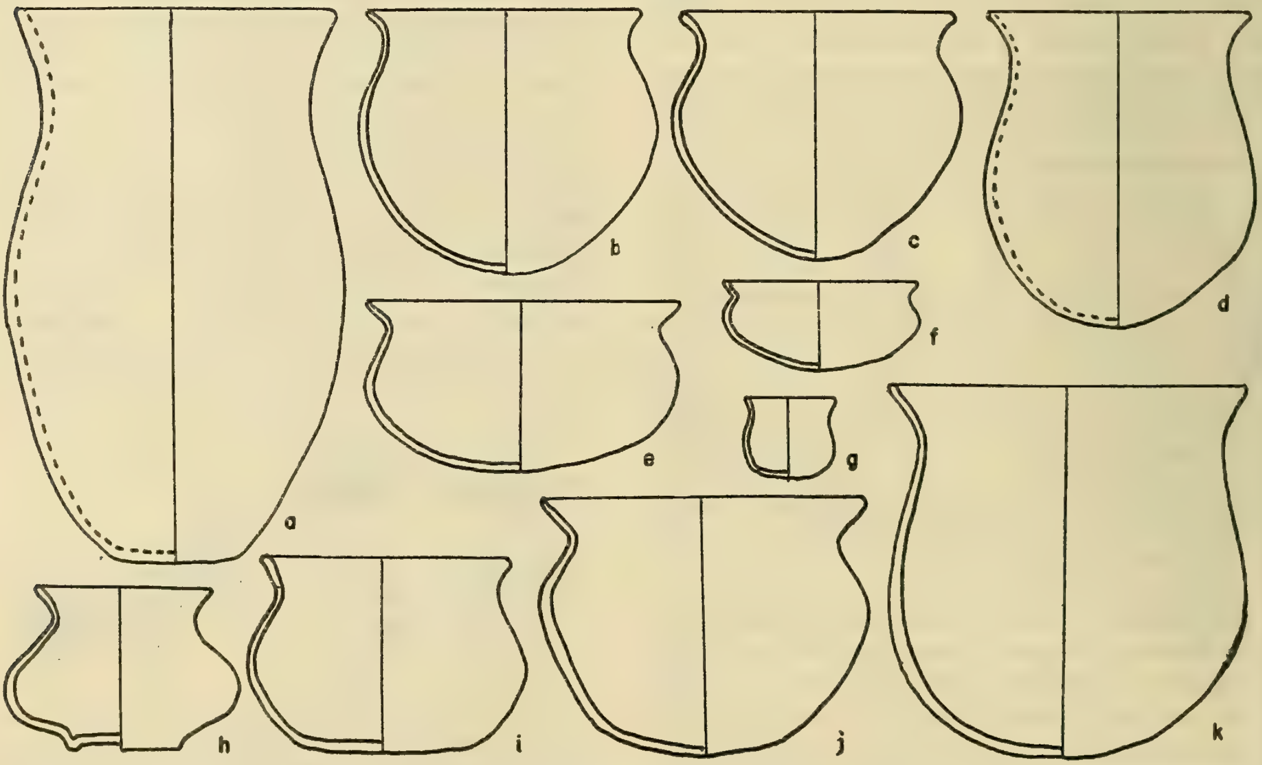

Figure 41.—Pottery jars. The manufacturer of *e* considers it a jar; a neighbor woman, a bowl. Redrawn from field sketches. *a, d,* In use; thickness could not be determined. Various women potters represented. Scale: ⅛ natural size.

Bowls (*cajetes;* laˀ, l.ʌkˀ) vary considerably in form and size (fig. 42). Some, seen from above, are round; some are oval; and a few are three-sided. The latter are made occasionally to receive the ground maize as it comes from the milling stone, although the oval form is more favored. Still other *cajetes*, used to protect plants from *arriera* ants, have the form of a hollow doughnut sliced in half. A special product, a pottery replica of the wooden tray used in laundering, probably should be classed with bowls. Of these, we have seen only three examples, presumably of local manufacture. The present owners received them from former occupants of the house site. Large and clumsy, they would not have been easy to transport.

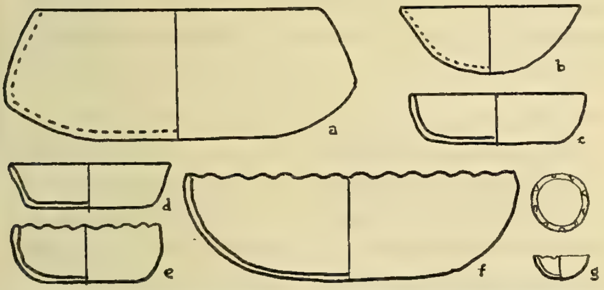

FIGURE 42.—Pottery bowls. Redrawn from field sketches. *a, b*, In use; thickness could not be determined. Various women potters represented. Scale: Slightly less than ⅛ natural size.

The differences in shape between jars and bowls is not always clear. They do not rest on proportion, inasmuch as some jars (fig. 41, *c, i, j*) have greater diameter than height. For the most part, jars have rounded bellies, rounded or pointed bases, and flaring rims, while bowls have rounded or flat bottoms, with the rims direct or incurved (fig. 42). In the minds of informants, the distinction does not depend on rim form, since one squat vessel (fig. 41, *e*) is regarded by one woman as a jar; by another, as a deep bowl. Perhaps, in the last analysis, function is more important than shape, and a vessel used for storing water or for boiling probably passes as a jar. Neither jars nor bowls can be considered decorated, although occasionally bowl rims are notched or scalloped (fig. 42, *e–g*).

In most households, a bowl is earmarked for each of the following uses: (*a*) washing hands before a meal; (*b*) washing *nixtamal;* (*c*) receiving the ground maize from the mill; (*d*) storing tomatoes; (*e*) storing chili; (*f*) storing other foods; (*g*) dipping lye-water from the storage jar; (*h*) dipping untreated water. In addition (*i*), in many families, children eat from home-made pottery bowls; and (*j*) a sizable one may serve as a dishpan (fig. 42, *a*).

The baking plate (*comal;* pálkˀ, pałka) is a large circular, ideally flat clay tray on which tortillas are cooked. "It should be more or less thick, so that the tortillas will not burn. But if it is very thick, it takes a long time to heat." Accordingly, María Loreto makes both thick and thin baking plates and uses the latter when she is pressed for time.

A pot cover (*tapadera;* limakačawan, ƛitakáču) is flat, like the baking plate, but has an effigy handle in the center (fig. 43). Relatively few families use such covers and they may be a recent innovation.

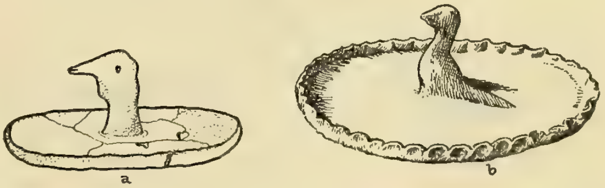

FIGURE 43.—Clay pot covers. Models made for us; *a*, by Ana Méndez; *b*, by Carmen Pérez Reyes. Scale: ⅙ natural size.

Every household has a certain amount of ceramic ceremonial equipment, in the form of candlesticks (*candeleros;* putaikatíla (figs. 44, 46, *a*)

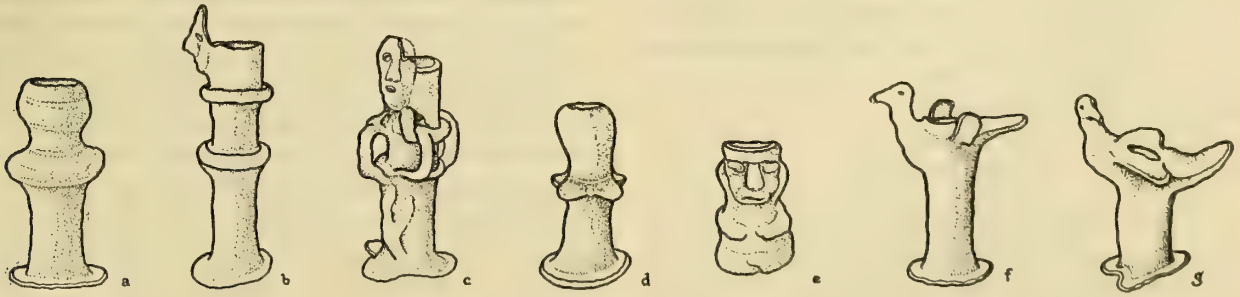

FIGURE 44.—Candlesticks. Pottery models made for us by Ana Méndez. Scale: Approximately ⅙ natural size.

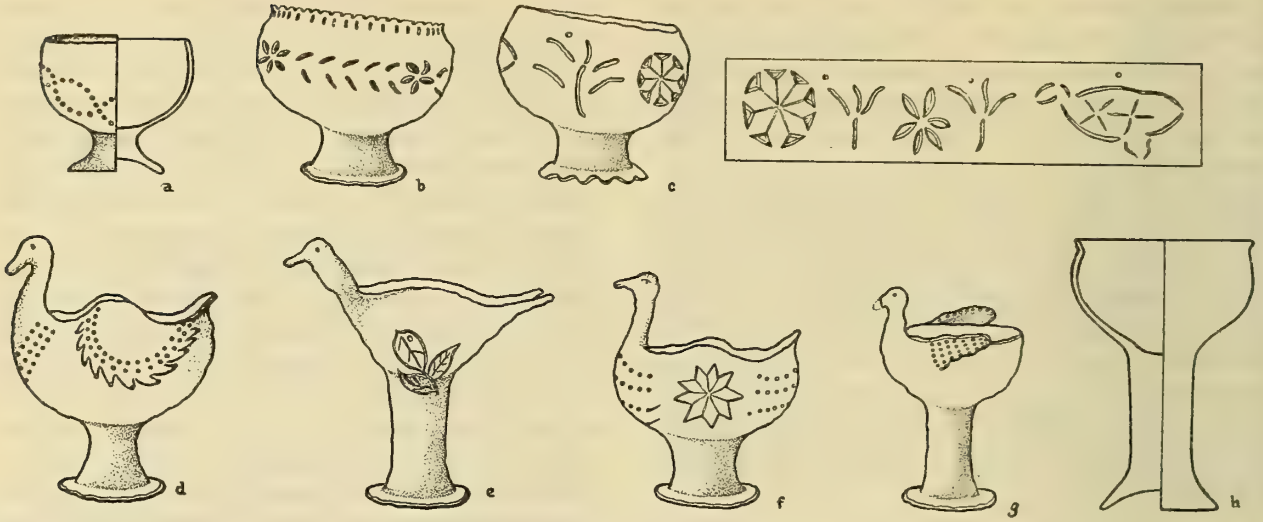

FIGURE 45.—Incense burners. *a–f*, Pottery models made for us; *g*, found on trail; *h*, sketched in home of Elena A. de Xochigua. *a, d, f*, Made by María Loreto, with ornament applied by Modesto González; *b, c*, by Rosa García; *e*, by Ana Méndez. Scale: ⅙ natural size.

and incense burners (*incensarios, copaleros;* pulukaskúyun) (fig. 45). Both often are effigies, usually birds. Modesto González suspects that the simple goblet form of incense burner (fig. 45, *h*) is more ancient than are the effigy types, but the latter have been used "for years." Sometimes a special container (fig. 46, *b*) is made to hold fresh incense, from which the supply in the burner is replenished.

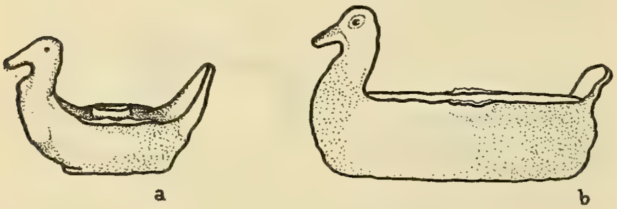

FIGURE 46.—Candlestick and container for unburned incense. *a*, Pottery model made by Ana Méndez; *b*, by Rosa García. Scale: ⅙ natural size.

Other pottery manufacturers include figures made by children (fig. 40), spindle whorls (*malacates;* lisi·wit) (fig. 54); and clay pipes (*cachimbas;* púškuli?), the latter known to us only through models (fig. 18, *b, c*).

MATERIALS

Clay is abundant and seems to be dug from almost any spot in the vicinity of the *fundo legal* and, presumably, of outlying districts. Near the *fundo*, it usually is taken from shallow pits along the trail to the pyramids; along one of the main trails to Papantla, near the spot where the Holy Cross guards the road; or in any number of individual fields. There are said to be several different colors—white, yellow, red, gray, and black Some women regard all as equally usable.

A woman collects the clay in her circular wooden tray. Should, by any chance, someone pass at the moment she is excavating, the success of the enterprise is jeopardized. To avoid this disaster, the woman throws a bit of clay at the intruder, when the latter does not notice. When the tray is filled, a couple of twigs are arranged on top, in the form of a cross, as protection on the homeward route. The tray is lifted to the head and borne home; upon reaching the house, the twigs are thrown away.

Some clay is said not to require the addition of temper; it can be used for jars, but if a baking plate is made of it, the tortillas will stick to the surface. To most clay, sand is added. Soft sandstone is collected from the vicinity of the pyramids and is ground on the metate, or sand from the arroyo is used; "sometimes the arroyo has no sand, if the current has brought none." Some women collect sand from the stream bed when it is plentiful and store it for future use. According to one informant, the sand and clay should come from the same vicinity, or "the earth will become angry" and the vessels will break when fired.

Sand collected from the arroyo is washed on the spot. It is placed in the wooden tray; water is added and allowed to run off, carrying with it extraneous matter. The sand then is spread in the sun to dry and later is passed through a sieve made of a perforated half of a calabash shell. In this state, the temper is ready for immediate use.

The clay receives little preliminary preparation; it is not spread to dry. When it is brought to the house, a bit of water may be added and the container covered with castor leaves. The moist clay is worked between the hands; a bit of the prepared sand is dropped on the surface of an inverted wooden tray and the clay kneaded with it. During the process, small stones are removed. When the clay is smooth, more sand may be sprinkled over it and worked in. The amount of temper is not measured; the potter judges from the feel of the mixture.

MANUFACTURE

Jars.—The detailed description below, of the manufacture of a jar by Ana Méndez, may be considered representative. The number and size of the initial coils vary with the size of the pot, and some women smooth with a rag instead of the hand; but, by and large, the technique seems pretty much the same among our several friends.

Doña Anita has the clay already prepared and covered with leaves, to keep it moist. She inverts an old box and uses its upper surface as a table, on which she spreads a banana leaf, split down the middle, so that it will lie flat.

She then removes a sizable lump of clay from her main stock and turns it counterclockwise in both hands, squeezing at the same time, so that the clay forms a long sausage, held vertically, which is 7 or 8 cm. in diameter (pl. 24, *a*).

Now, she arranges the roll of clay on the banana leaf in the form of a half circle. She prepares another roll in precisely the same manner, and with it completes the circle, pinching the joints together. She repeats the process, and this time places the new roll of clay directly on top of the already formed coil (pl. 24, *b*). She adds another roll, to complete the second circle, and again pinches the junctures together. Next is added a third circle of clay, consisting of one very long and one very short roll. At this point, there are three circles of clay resting on top of one another (pl. 24, *c*), each formed by two discrete rolls of clay pinched together at the respective junctions. The first circle has its joints along the axis of the banana leaf; the second is joined at precisely opposite points (that is, 90 degrees removed) (pl. 24, *b*); the third circle likewise has the joints broken.

Doña Anita now places her left hand against the exterior of the three superimposed circles, as a support; and with the right hand, she applies upward strokes to the interior, fusing the coils. Then, with her left hand supporting the interior, she strokes the exterior upward.

By this time, the cylinder of clay stands about 35 cm. tall (pl. 24, *d*). An old corncob (with clay from previous operations embedded in its hollows) is dipped in water, and with it the upper part of the exterior of the cylinder is scraped, using an upward, vertical movement (pl. 24, *e*).

Next, Doña Anita selects one of two fragments of the calabash shell, which have been cut with a knife to form rough, concavo-convex disks. With one of these, she scrapes the interior of the upper part of the cylinder, using the same vertical motion. During this process, the left hand is held against the exterior, to support the wall (pl. 24, *f*).

Then the interior wall is smoothed with her right hand, by means of horizontal stroking motions, while the left hand is held against the exterior. The latter has dried somewhat, for the sun has come out; Doña Anita dips her hand in water and rubs the exterior wall horizontally.

Stroking with the corncob has produced a considerable flare at the upper edge of the cylinder, and this is to become the rim of the jar. The belly now is expanded, by rubbing the wall horizontally on the interior and pushing outward, with the right hand, while the left, on the exterior, protects the wall from undue pressure (pl. 24, *g*). Doña Anita steps back to view the result, then attempts to expand part of the body still further, so that the vessel may be approximately symmetrical.

At last, she is satisfied, and the partially shaped vessel, innocent of base, is allowed to stand 4 or 5 days. The lower part of the belly is carefully covered with castor leaves, to keep the clay moist, while the rim and upper part are exposed to dry. By the end of a few days, the vessel is inverted, to stand mouth downward on the box. The unfinished base now points upward. Because of its covering of leaves, the clay still is humid. Also, it is very thick at this point where, previously, it rested on the box. With gentle, upward strokes, the clay is thinned and pressed upward, to close the aperture; (plate 19, *h*, shows this operation nearly completed on the vessel in the right foreground). Sometimes more clay is added, in the form of a roll, or as a small cake.

If the jar is small, handling is less hazardous and the base may be completed immediately the walls and rim are finished. A completed jar is allowed to dry, after which the interior base is smoothed somewhat, and the exterior of the vessel is polished with a pebble. Despite these attentions, the surface of a jar generally is rough and gives little evidence of polishing. Often the vertical striations which have resulted from stroking with the corncob are to be seen on the finished specimen, just below the rim.

The next step is firing. Any kind of wood may be used, provided it is thoroughly dry and the sticks are sufficiently long and thick. Even the *chaca* (No. 228), ordinarily disdained as fuel, is acceptable. It is said that formerly, bamboo (*tarro*, No. 180) was greatly favored and that vessels baked in its fire "ring like a bell."

One evening, we watched Doña Anita bake an unusually large jar which she had made almost a month before:

> The wood is neatly stacked. On the ground are four or five large trunks, of uniform length, all laid parallel and touching one another. On top of them, of the same length and likewise parallel, somewhat lighter wood is stacked. At each side, three light stakes have been driven into the ground, to keep the wood from rolling out of place. The pyre stands about 0.5 m. high and a bit over a meter in length.
>
> Doña Anita lights the fire on the top, using coals from her kitchen hearth, and fanning the incipient blaze with an old hat of her husband's (the firefan is unknown in Tajín). When the pyre is well lighted, she and her spouse bring the large jar from the house and place it directly on the fire, mouth downward. She continues fanning the blaze, until at last the rim of the jar turns reddish.
>
> After a considerable lapse of time, although the red color does not extend beyond the rim, the vessel is turned. Her husband, standing at one side, inserts a long pole beneath the rim of the pot, while Doña Anita, on the opposite side, pushes with a pole against the lower wall. The jar is turned on its side, and her husband, with his pole, forces it again into vertical position, this time, rim upward. With the poles, the firewood is pushed around in such manner that thick sticks are about the base of the pot and prevent its falling.
>
> The vessel remains in this position until the fire is consumed. It turns only slightly red on the bottom and lower walls, and the color does not extend to the upper half of the vessel. In the morning of the following day, the pot is removed from the ashes.

If the jar is very small, it may be baked on a simple bonfire, or on the kitchen hearth, with the sticks placed radially. In this case, likewise, the vessel first is placed mouth down, and later is turned upright. Sometimes, it is said two jars may be fired concurrently, but multiple baking seems unusual.

Bowls.—The initial steps in making a large bowl—circular or oval—are identical with those of a jar:

> Rolls of clay are shaped between the hands and two are placed to form a circle or an oval on a banana leaf, which covers a board or the top of a box. Ordinarily, two superimposed circles of clay rolls give sufficient height for the walls (pl. 25, *a*). With upward stroking of the fingers, the circles are fused, first on the interior wall (pl. 25, *b*), then on the exterior. The upper edge is wiped with the moistened hand to form the rim of the bowl (pl. 25, *c*), following which the walls are scraped with the calabash disk described previously.

In contrast to a jar, the base of a bowl is added at once, and the vessel is not inverted for this operation:

> Clay is patted between the hands, as though it were a tortilla, until it forms a disk of the indicated size and thickness. This is placed directly on the banana leaf, inside the cylindrical walls. With the fingertips, the disk and side walls are worked together. The hands are dipped in water and the whole surface wiped smooth (pl. 25, *d*).
>
> The finished vessel is set to one side, on rags, and surrounded by castor leaves, so that it may dry slowly. A semidry vessel is scraped further and the base-wall junction smoothed.

We did not have opportunity to witness the manufacture of the special *cajete*, which takes the form of a hollow doughnut, transversely bisected. These clay rings, open at the top to receive water, are set around young plants to guard them against ants. They also may be used about the feet of the posts which support the box in which the Old World bee is kept—again, as protection against ants. Several women in Tajín manufacture such ring-shaped vessels, but we cannot say whether the form is of recent introduction. Identical pottery devices as protection against ants are found in mestizo communities in Jalisco, and, on the authority of Erich Georgi, in Acatlán in the Mixteca.

Bowls are fired as are jars, according to size. If the vessel is large, it requires a special pyre, with all the wood parallel and of uniform length. If it is small, it may be baked on the kitchen hearth, with the wood arranged radially. As usual, the vessel is placed in the fire, mouth down, and later is turned upright.

Baking plate and pot cover.—A baking plate (*comal*) for tortillas generally is formed on the base of the circular wooden tray, inverted for this purpose (pl. 25, *e*), and sprinkled with sand or finely powdered ash, so that the clay will not stick.

> A ball of mud is worked between the hands and then is placed on the tray. With the palm, it is beaten lightly and pressed until it covers the entire circular surface of the tray. The rim is turned up slightly, by running one finger about the circumference onl the inside, another on the outside. Occasionally, the rim is pinched as though it were piecrust.
>
> The upper surface of the plate is smoothed alternately with the palm (pl. 25, *f*) and with a corncob, which has been toasted to remove loose fibers. With the cob, finger

impressions are obliterated, and any small stones which remain in the clay are brought to the surface and removed. "If one leaves stones, they heat and break the plate."

For several days, the griddle is allowed to dry; the center is exposed, but the rim is covered, to prevent its splitting. When, finally, a fingernail leaves no impression, the entire upper surface of the plate is polished with a small stone, so that the tortillas will not stick; the lower surface remains rough.

The plate must be thoroughly dry before it is baked; in fall, about 15 days are required; in spring, half that time. The *comal* is either fired on the kitchen hearth or on a small blaze outside, in both cases, with the wood arranged radially (pl. 25, *g*). To prevent breakage, burning brands or a handful of ash are placed on the upper surface of the plate during firing; the latter usually requires a couple of hours.

Probably because of its shape, the *comal* is difficult to fire successfully, and specimens which survive the ordeal intact generally are badly warped. One griddle broke "because it was photographed"; another, simply because one of us witnessed the firing. Women do not make a *comal* and a jar concurrently; "one of the vessels might become angry and break the other." Even an old, used griddle requires special consideration. If it is on the kitchen fire, but not actually in use—that is, when tortilla making has been completed, or when there is a break in that activity—it is advisable to place a burning brand on the plate, "so that it may not suffer."

The manufacture of a pot cover is identical with that of the *comal*, except that a small effigy, to serve as a knob (fig. 43), is formed separately, in the hands, and is affixed to the center of the plate when the clay still is moist.

Candlesticks and incense burners.—Candlesticks are formed from a roll of clay, 6 to 8 cm. in diameter and about 15 cm. long. At one end, the finger is pressed into the wet clay to form the cavity for the candle. The stem is modeled to the taste of the potter, and ornament sometimes is appliqued (fig. 44, *c*, *e*). The base of the candlestick is completed last, at least, by Ana Méndez. One may sit to make a candlestick, but the potter stands as she works on other ceramic products, no matter how small.

Hanging incense burners (not illustrated) usually have a low ring base. They are fashioned as are bowls, and four holes are punched near the rim, through which wires for suspension are passed. Otherwise, these specimens are similar to the table models shown in figure 45, *a–c*.

Standing incense burners generally have a tall base (fig. 45); some are goblet-shaped (fig. 45, *h*). They are manufactured by the lump method. A ball of clay is held in the hands and is constricted in the center, to form the stem, at each end of which is an amorphous mass of clay. One is worked into some semblance of a base and the half-finished vessel stood on it. Next, the bowl part is formed, by stroking the upper mass of clay upward, with the right hand on the exterior, as a support. When the receptacle is formed, an effigy head may be modeled separately, in the hands, and affixed to the bowl. The surface is smoothed and the entire vessel wrapped in rags or leaves, so that it may dry evenly. Because of their relatively small size, both candlesticks and incense burners usually are baked on the kitchen hearth.

Other ceramic products.—We did not see the flat-bottomed container for unburned incense (fig. 46, *b*) in the process of manufacture but suppose it to be made as is a bowl, with the addition of effigy features.

Nor did we have opportunity to see spindle whorls (fig. 54) or pipes made. A pipe probably is formed pretty much as is a candlestick. Modesto González presented us with several models (fig. 18, *b*, *c*,), and we suspect that at least the effigy products (fig. 18, *b*) represent his own ideas rather than an ancient Totonac pattern. In former times, women made the pipes; presumably then, as now, they were indisputably the potters.

Comments.—The Totonac manner of making a jar, by forming the sides and rim first, as a cylinder, and completing the base later (p. 217), warrants special comment, for such procedure seldom has been reported for the New World. Of published instances, we know but one, from San Salvador (Lothrop, pp. 112–115). However, G. Stresser-Péan has witnessed similar ceramic procedure in parts of the Huasteca, as has Ricardo Pozas in Tecomatepec, near Ixtapan de la Sal, in the State of Mexico. In short, this method of manufacturing pots, which Lothrop (p. 116) regarded as unique, may prove to be relatively widespread. The occurrences mentioned above are curiously scattered, and it is highly desirable that the complete distribution be known.

DECORATION

Most Tajín ceramic ornament is concentrated on candlesticks and incense burners. Both involve a certain amount of modeling. Candlesticks, in particular, have appliquéd decoration (fig. 44, *c*, *e*); incense burners frequently are adorned with punching, engraving, and cut-out work (fig. 45, *a–g*). Modeling and appliqué take place at the time the product is formed. Punching, engraving, and cut-out work, made with a nail or small stick, are performed when the specimen is partially dry. The incense burners made for us by María Loreto (fig. 45, *d*, *f*) actually were decorated by Modesto González.

Painting is relatively infrequent. It is said that sometimes candlesticks and incense burners are painted with a *tepetate* (*sic*) from the arroyo, which turns red when fired. We saw no specimens so decorated and the practice evidently is not common.

Occasionally, both candlesticks and incense burners have rude ornament in asphalt (*chapopote;* čápopot [*sic*]), which is bought in Papantla or Tecolutla. When the specimens are still hot from firing, a bit of asphalt is rubbed over them. We have seen only dribbles and simple stripes (małtítwa), but some claim that lozenges (*pemoles;* no Totonac name) and frets (?) (*grecas;* taskúlit) also are used. The practice of decorating with asphalt is said to be ancient. It may be even more ancient than informants realize, for some of the figurines excavated recently by Ing. José García Payón, in sixteenth-century "Cempoala," appear to have received similar treatment.

One further detail should be mentioned here—that is, the former use, in Talaxca, of a blue vegetable dye, said to have been applied to the exterior walls of pottery jars (p. 244).

CORDAGE, KNOTS, BRAIDS

CORDAGE

Today the Totonac rely largely upon commercial twine and rope, and their own manufactures are limited.

Cordage of the leaf of the *palma redonda* (No. 259) often is used to tie the corn-husk wrapping about cakes of sugar. The palm is cut green and, to make it less brittle, is boiled an hour or so in cane sirup, following which it is washed and dried. Later, it is split in strips and twisted. The latter process is performed by Magdaleno García as follows:

> The tips of two strands are passed between the big toe and the succeeding one, of the left foot, and are given a double twist, to secure them. The long end is held in the hands. At the start, the strands are twisted between the fingers, but after a few turns, they are rolled between the palms—the left hand moving away from the body, the right, toward it. As the twisting starts, the strands are passed beneath the big toe of the right foot (fig. 47) to give tension. Once the strands are loosely united, twisting ceases. The whole procedure takes place with great dispatch.

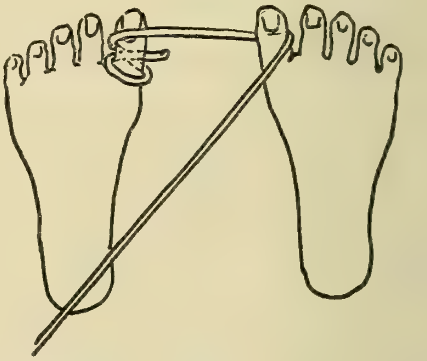

FIGURE 47.—Making cordage of *palma real.* See text (p. 220) for details.

Bark of both the *jonote blanco* and the *jonote colorado* (Nos. 25, 100) serves as cordage. The former is preferred, because it is softer. It is cut from the tree and for a week is allowed to lie in the arroyo, to free the fiber. The latter is removed and dried, then is left outside the house all night, to bleach. We saw a seven-strand braid tumpline model made of *jonote blanco.* When the braided section was sufficiently long, the loose strands at either end were twisted into cordage. First, the seven strands were divided into two lots, of three and four strands, respectively. The two lots were rolled separately, between the palm and the shin; then both were rolled together (away from the body), to form a two-strand twine.

Jonote colorado requires no retting. The bark is cut from the tree in long, narrow strips, and with the fingers, the inner bark is removed. It is dried in the sun a couple of days, then is ready for use.

Formerly, the fiber of a bromelia (*pita*, No.

224) was used as sewing thread, as well as to make cordage for fish nets. The flesh was removed with a split bamboo, or the leaf was allowed to stand in the arroyo for about 2 weeks. This fiber is scarcely used today, although it is said that not long ago one man had a supply reposing in the arroyo, when the stream flooded and carried the entire lot with it. In the early seventeenth century, *pita* fiber is mentioned as one of the principal products of Papantla (Mota y Escobar, p. 233); and in the late sixteenth century, *pita* is said to have been a specialty of the Zacatlán area, being marketed in Tlaxcala (Relación de Zacatlán). Another sixteenth-century source (Paso y Troncoso, 5:110) reports that the Totonac of Coacoatzintla, near Jalapa, manufactured clothing of *pita* fiber.

KNOTS

We have not attempted to record all the knots and lashings current in Tajín, but a few are noted in figure 48; none appears to be named. That shown in *a* generally is used to splice ropes and lianas. *b* is used in roofing; one end of a liana is tied to a withe of the roof frame; the knot is pulled tight, following which the free end is used to lash the thatch. Various ways of tying thatch are shown elsewhere (fig. 20). The manner of lashing the mother beam to a house post is seen (interior view) in figure 48, *c*.

Several knots are used in the course of the famous Flying Pole or Volador dance; the latter will be treated in detail in Part 2, which will be published separately. Briefly, a tall pole (ca. 30 m. high) is set in the ground. On its tip is fitted a spoollike attachment which revolves and from which is suspended a quadrilateral frame. On each bar of the latter one of the four fliers sits prior to the descent. At a given signal, each ties a rope about his waist and throws himself backward, off the frame. As the frame and the spool revolve, the dancers descend to the ground, describing circles of progressively smaller diameter until they land.

The ropes which support the quadrilateral frame are looped over one another precisely as shown in figure 48, *a*. This "knot" rests in a shallow depression on the upper surface of the spool, each of the four extremities being passed through a perforation in the latter and tied to one of the corners of the frame.

On the main pole, immediately beneath the spool, are wrapped the four ropes by means of which the dancers are lowered to the ground. The end of each rope is tied to the post, as shown in *d*, following which the free end is wrapped about the pole in such manner that the coils unwind, as the frame and spool revolve. What remains of the rope, after the wrapping, is tossed

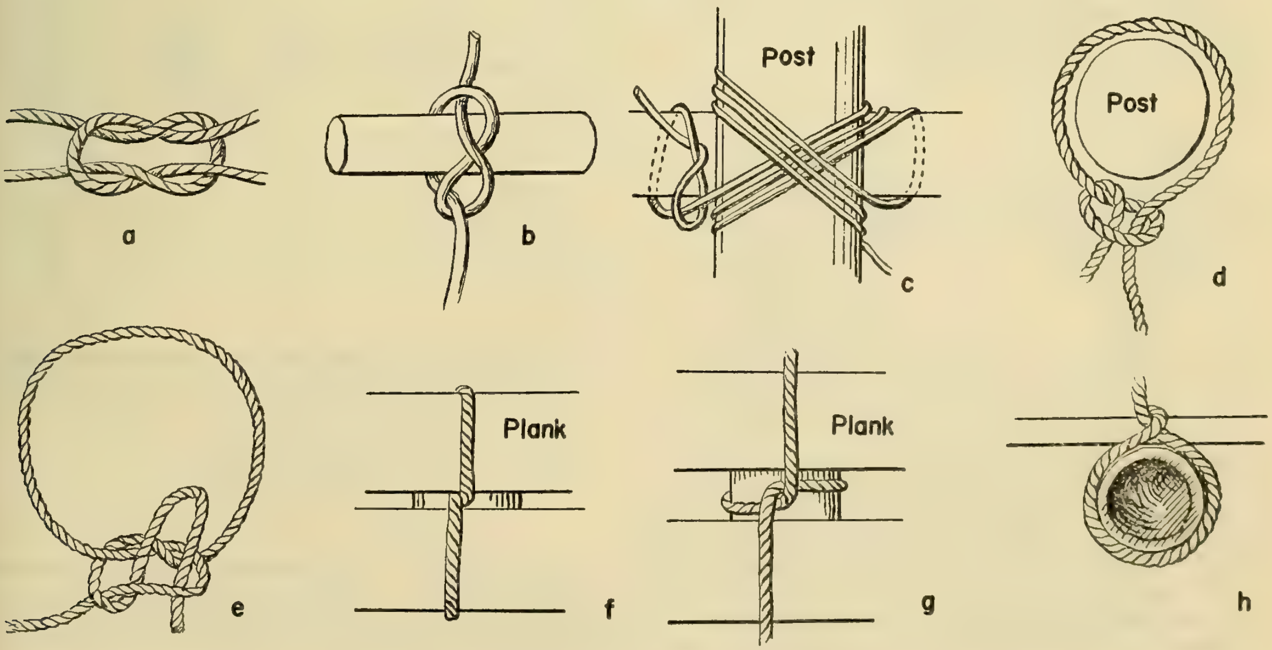

FIGURE 48.—Knots and lashings. See text (pp. 221-222) for explanation.

over a bar of the frame, so that each of the four dancers has a loose end of rope at hand. This is tied about the waist, using the knot shown in figure 48, *e*. This particular knot has the advantage of tightening, nooselike, not against the body, but against the upstanding loop. An identical knot is used in tethering a horse by the neck; another is said to serve equally well, but we neglected to record it.

Still another group of dancers makes use of a knot. These are the Negritos, whose performance is, in large part, a rapid tap dance executed on a sounding board. The planks of the latter are lashed to transverse bamboos, which raise them a few inches above the ground. Figure 48, *f*, shows the planks from above, each traversed by a rope; in *g*, the planks have been separated slightly, to show how the rope encloses the bamboo beneath; *h* gives the section of this lashing.

The knots and lashings noted above are used by men, in the course of house building, dancing, or tethering animals; men also affix a leather strap to the sheath of the machete in various ways (fig. 69). Women utilize a different series of knots in making the fringe that adorns their textile products (fig. 62).

BRAIDS

Women braid their hair in three strands. Otherwise, braiding appears to be confined to the manufacture of the head tump, made from the bark of one of the *jonotes* (see above). According to the desired width, the braid may be of 7 (fig. 49, *a*), 9 or 11 strands (fig. 49, *b*). The braid is held in both hands and is worked away from the operator (pl. 26, *a*). When it is sufficiently long to be looped over the crown of the head and to reach the chest, it is tied. In a small model made for us, the loose strands of the braid, at each end, were twisted to form cordage, as described above. Generally, however, the end of the braid is turned back on itself and secured in place, while a rope or other strong cord is affixed to the end (fig. 50).

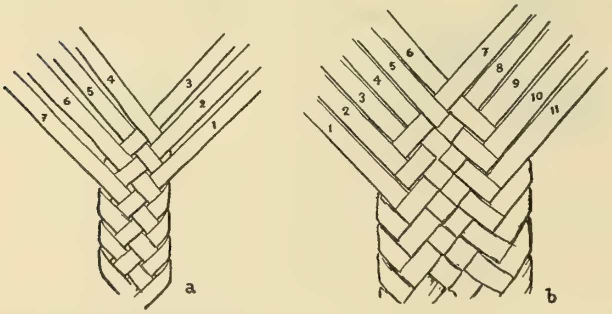

FIGURE 49.—Braids. Models made by Modesto González. *a*, Seven-strand. At the point illustrated, strand 7 would pass next under 6 and 5, and over 4. Following this move, strand 1 would pass beneath 2 and 3, and over 7, the latter now being in central position. *b*, 11-strand braid. The next strand to shift position is 1, which passes beneath 2 and 3, over 4 and 5, and under 6. Next, strand 11 is passed beneath 10 and 9, over 8 and 7, and under 1, the latter now being in central position.

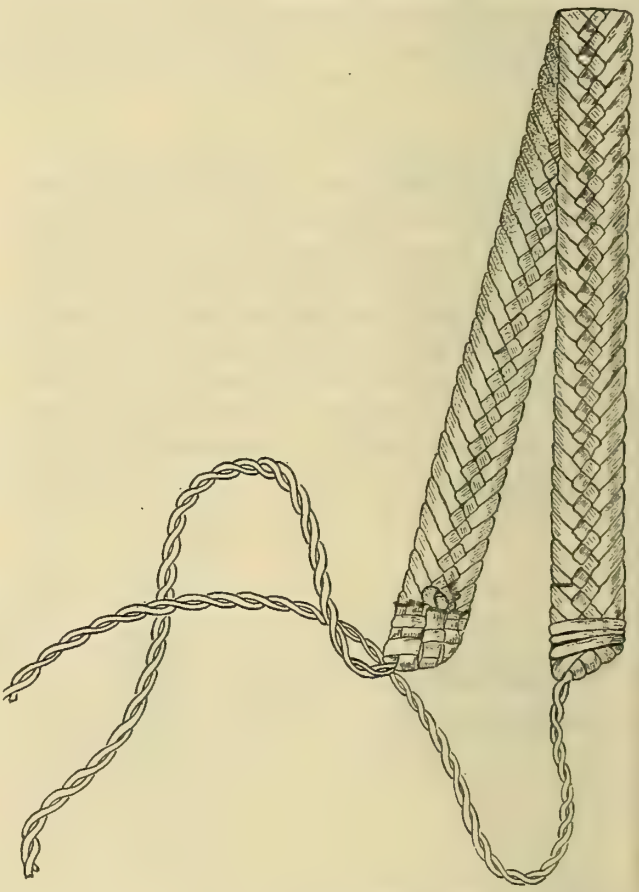

FIGURE 50.—Model tumpline. Of seven-strand braid; made by Modesto González, of the bark of *jonote colorado*. Width ca. 3 cm.

PALM WEAVING

ALTAR ORNAMENTS

An assortment of palm figures (pl. 27) is woven by the men for certain ceremonial occasions, especially those which center about the domestic shrine. Flat, rosettelike ornaments are attached with a skewer to greenery decorating either the altar frame (pl. 15, *a*) or the arch set at the head of a grave in the cemetery. Sometimes, palm arches are erected in honor of a visiting saint, and to them palm rosettes are pinned (pl. 26, *f*). Flowers, according to season, but most often marigolds, bougainvillea, or *Plumeria* (No. 151) are stuck about the edge of the woven center (pl. 27, *b*).

The simplest form of rosette, known as a star, is used in quantity. Ten or fifteen men may collaborate in collecting the palm and in weaving the figures. Not all know how to make them; a good many are able to weave the simple star, but few make the more elaborate figures. The latter are hung from the canopy over the altar or from the arch over the grave.

Palm figures—sometimes quite elaborate ones—are woven in many parts of Mexico, especially for Palm Sunday. Those of Tajín are based, for the most part, on the rosettelike star, whose distribution, if known, might be of considerable interest. A passing mention of ornamental "stars and rosettes" of palm, for the Mixteca (Starr, p. 127) may indicate that similar manufactures are current there. The possibility of an essentially Gulf coast distribution might also be borne in mind.

In Tajín, the immature leaf from the heart of the *coyol* palm (No. 362) is preferred; if necessary, that of the *palma redonda* (No. 259) may be substituted. The leaflets are folded in the young *coyol* leaf, which is bent to loosen them. Each leaflet then is separated with care and is checked twice to make sure that all thornlike spines have been removed. Each narrow leaflet grows doubled lengthwise, and along the fold is a semirigid vein. This and adjacent parts of the leaflets are cream-colored, while the doubled edges are a light green; in weaving, these differences in color are capitalized.

Star.—For the basic palm figure known as a star (*estrella;* ¢ʌku, ¢u·kswat) (pl. 27, *a*, *b*), either 33 or 37 leaflets are used, dependent upon the size of the finished specimen. Below is a brief description of the manufacture of a star by Lorenzo Xochigua.

A start is made by placing three leaflets in triangular formation (fig. 51, *a*) on a table or board; the creamy vein of each faces the central opening. The base of the fourth leaflet is inserted in the central aperture and is pulled into place (fig. 51, *b*). The fifth is introduced from the outside, as is the sixth. Work continues counterclockwise, until the circle is completed and rather compactly woven. By this time, the central aperture no longer is triangular, but circular. In every case, the leaflet is so inserted that its cream-colored vein lies toward the central opening.

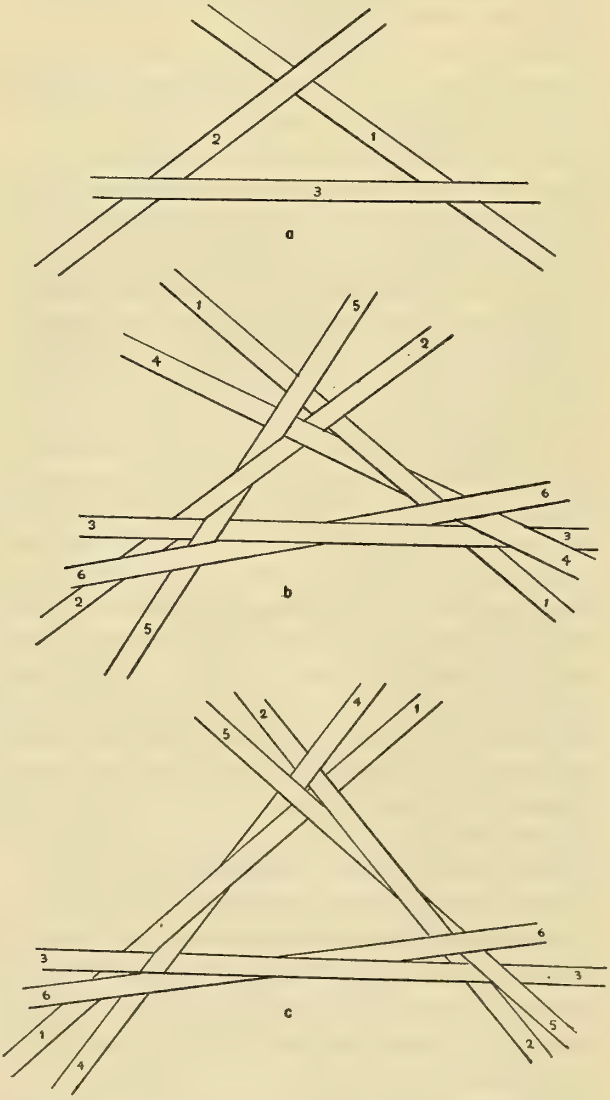

FIGURE 51.—Start of palm star figure. *a*, *b*, Foundation used by Lorenzo Xochigua; *c*, by Rutilio Olmos. See text (pp. 223–224) for explanation.

Next, the leaflets which lie on the upper or work face are lifted, and a narrow strip of palm leaf (pl. 27, *a*) or of *jonote* (No. 100) bark is passed beneath them. The strand is pulled tight and tied, so that the woven center will not ravel. Now, the half-finished star is held vertically in one hand and is twirled rapidly, while the thumb taps the woven center lightly; this results in a more even distribution of the individual leaflets.

Finally, the loose ends of the leaflets are trimmed. Each tip is doubled longitudinally and is cut diagonally with a knife. Thus, as the leaflet opens, it terminates in a V-shaped notch (pl. 27, *a–d*). First, the ends of the upper face are trimmed; next, those on the lower face. The result is a rosettelike figure, highly decorative, especially when bright flowers are inserted about the edge of the woven center (pl. 27, *b*).

Rutilio Olmos, originally of Cazuelas, near Papantla, but now a resident of Tajín, follows a slightly different procedure.

He likewise starts with a foundation of three leaflets, crossed to form a triangle, but he lays them in different order (fig. 51, *c*). Moreover, the fourth leaflet is not inserted directly in the central opening, but from the outside; it passes through the aperture and emerges at the lower left. The fifth is added from the outside, at the lower right; the sixth, at the lower left, also from the outside. In short, he works clockwise. Leaflets are added until the center is completely filled; the finishing process is identical with that described above.

Don Rutilio claims to have devised a special technique for producing a variant of the *estrella.* He is so pleased with his alleged invention that he requested we allow nobody to unravel the specimen he gave us (pl. 27, *c*), for fear they would discover his secret. "They may look, no more." The technique consists in taking a half completed star and of overweaving upon it. He worked so rapidly and was so interested in having the operation not recorded, that we are unable to give the precise procedure. The result is a heavier, more substantial star, with the central portion not simply radial, but overlapping.

Other palm figures.—Basically, other palm ornaments are variants of the star.

One, generally known as a sun (*sol*, čičiniˀ), is called sacrament (*sacramento;* kinpučinakan) by Don Rutilio. Essentially, this is a double-faced star whose weaving is pulled very tight (pl. 27, *f*).

The first step is to make a complete star, as described above, except for the final trimming. Once completed, the ends of all the leaflets of the upper or work face are turned upward and rewoven. One from the lower left is carried to the upper right, following which Don Rutilio interleaves the leaflets all around the circle, proceeding counterclockwise. The result is a double-faced star of normal size. But carefully, one by one, the ends of the leaflets are pulled to tighten the weaving. The center shrinks proportionately, until the end result is a tightly woven disk about the size of a tennis ball (pl. 27, *f*).

The leaflets of the under face, which have not been included in the reweaving, now are trimmed to form a *resplandor* (a series of jagged rays, such as often form the halo in paintings of the Holy Family), and long, slender palm veins from which the leaf has been stripped, are inserted in pairs, to emphasize the raylike effect. The figure is laid on the table and the ends of the remaining leaflets are trimmed, in counterclockwise progression, to coincide with those already cut.

A sun, used as an altar ornament, is seen at the top center of plate 26, *d;* another is partially visible at the upper left.

A further variant is known as a pineapple *piña;* ma·¢atˀ, ma·¢a¢a).

This, too, starts as a normal star, with untrimmed ends. All the leaflet ends on the upper or work surface are collected, lifted upward, and tied together in a bunch. They outline a sort of hollow, pear-shaped cavity. Next, the ends of the leaflets from the lower face are picked up and are woven diagonally, one by one, with the upper ones, the latter forming the warp. Work proceeds clockwise.

This operation completed, Don Rutilio unties the bark strand with which the warps have been tied together. He opens the top of the "pineapple," turns the weft ends inside, and pulls them downward, to emerge through the central aperture of the original star, where they hang like fringe (pl. 27, *e*). The warps then are cut to uniform length and are retied in a bunch, with a strand of bark, by which the figure may be hung.

Still another palm ornament, likewise based on a star, is known as a basket (*canasto;* aksmul) or gourd (*guaje;* akstuntu).

The basic star or *estrella* is woven, but not trimmed. The ends of all the leaflets of the upper face are turned upward and rewoven, forming what really is a double-faced star. However, the two faces are several centimeters apart and are connected by ribs, formed by the leaflets of the upper face of the original figure. The work has been so planned that the ends of all these are the tips of the leaflets, and they billow loosely over the outside of the "basket," like a fringe (pl. 27, *g*). The lower leaflets of the original star all are basal ends, which are trimmed short and are allowed to stick out horizontally for a short distance, about the bottom of the "basket." A strip of *jonote* bark is affixed to the top, so that the figure may be hung.

PALM ARCHES

When the image of a saint is to visit Tajín, special arches of *palma real* (No. 364) are arranged in honor of the occasion. Along the trail, a pair of leaves may be set, the bases of the petioles in the ground, about a meter apart, and the tips brought together, to form an arch. Or, at points where those who carry the saint are to rest, a canopy of four leaves (pl. 26, *f*) is erected.

The leaf segments along the inner side of the simple arch are woven into a sort of selvage (pl.

27, *d*; fig. 52). We did not see this being made, but it is said that work starts above and proceeds downward; at the bottom is a fringe of loose segments which form a sort of tassel on the ground. We photographed one canopy of four leaves (pl. 26, *f*), which has this selvage on both sides of the lower half of each. To these arches and canopies palm stars usually are pinned, giving a very festive effect.

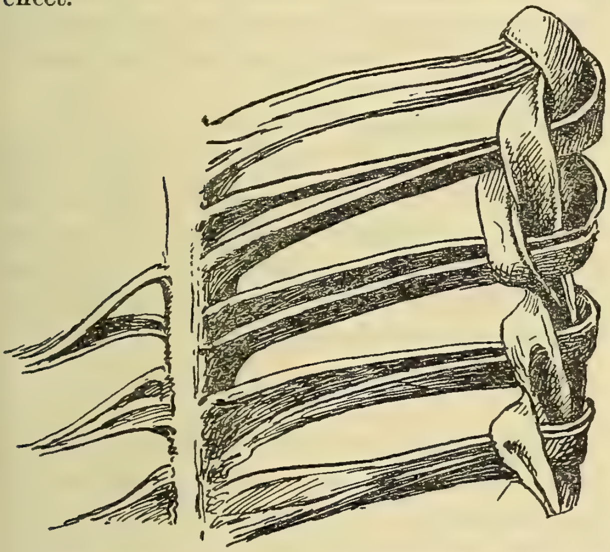

Figure 52.—Selvage of palm arch. See text (p. 224-225) for explanation.

OTHER PALM MANUFACTURES

The ancient Totonac are said to have made palm mats and seats (*asientos*), decorated in colors (Sahagun 3: 129), but this craft is not found in Tajín today.

One day, for our entertainment, Pablo González wove a couple of toys of the leaf of the *coyol* palm, one representing a serpent, the other a grasshopper (fig. 53). As far as we know, the manufacture of such palm effigies is not common.

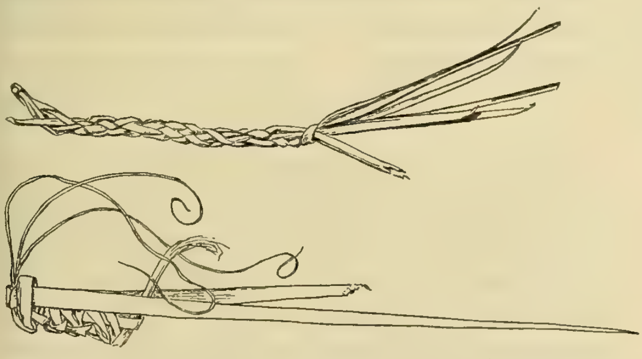

Figure 53.—Palm toys. Woven by Pablo González, of *coyol* palm. Upper, a serpent; lower, a grasshopper. Scale: Slightly less than ⅓ natural size.

In contrast to the Huasteca (Starr, p. 284), there is no weaving of palm hats in Tajín, although it is said that Ignacio de la Cruz, long since dead, knew how to braid strips of *palma redonda*, to be sewn into hats.

BASKETRY

In "Cempoala," the Spaniards were offered baskets of hog plums (Díaz del Castillo 1: 171), but in Tajín today, baskets are of little importance. From time to time, a commercial product is bought in Papantla and serves as a general utility container—for maize, for other food, and, in one house, for storing balls of spun cotton. Strangely enough, no basket is used in harvesting, and corn is collected in commercial sacks; it is possible that the latter have replaced the old carrying frame. The need for baskets probably is slight, since gourds and wooden trays are plentiful in every household; moreover, the Papantla market supplies maguey fiber shoulder bags and flexible palm baskets.[22]

Of baskets as such, the only specimens we have seen are of wickerwork. Although baskets in the literal sense are rare, paradoxically, basketry stitches are plentiful. The upright poles which form fences and house walls are attached to crosspieces with liana, which is applied as wrapped twine; and the rectangular hanging shelves used in kitchens are held together with the same stitch. It seems likely that the latter also enters into the construction of cane bird cages, although through oversight no description of the latter was recorded. Assuredly, the coiled filler used in making the cradle and the circular, hanging tray on which provisions are stored is a form of basketry, as are palm figures and woven chair seats.

In other words, although baskets scarcely are to be seen in Tajín, the Totonac use wickerwork, wrapped twine, coil without foundation, and, for the palm figures and chair seats, a technique akin to checkerwork. It is worth noting that these basketry stitches are used exclusively by men.

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[22] The palm receptacle is flat-bottomed, with cylindrical walls, and is woven in checkerwork, double at the rim. Our informants do not know the source of these containers, which are sold in Papantla as *tenates*. Although there is no tradition of local manufacture, the receptacle has a Totonac name (pa¢aya). Such a basket is converted into a burden carrier by the simple expedient of tying the tumpline to the rim, passing its cords beneath the basket, to give support. Bread and other small purchases sometimes are carried from Panantla in a *tenate*, but its use is far from general.

WICKER BASKETS

The few baskets of local manufacture are all of wickerwork. At present, only Modesto González and Pascual Santes seem to try their hands at this craft. One notably poor bit of wickerwork (pl. 22, *f*) was made as a strainer for maize gruel; such colanders are not in general use, and a loosely woven cotton cloth usually functions as a sieve. The basket in question has warps of split bamboo. The weft of the base is a fiber twine, called *camoteca*, purchased in Papantla; that of the walls is the root of a vine known as *chápiso* (No. 156). Its slender root is scorched in a corn-husk blaze to permit the removal of the outer skin; the interior is "very white" and pliable. The other specimen illustrated (pl. 22, *b*) is likewise of *chápiso*, with the handle of *bejuco colorado* (No. 131).

CRADLE

The cradle (pútaju) consists of an oval frame, coil-filled, and suspended from the house beams by four ropes. "Any" liana may be used for the hoop, but *chilillo* (No. 112) is particularly favored because it resists borers. A length of substantial thickness is cut with the machete and is bent to form an oval, being lashed securely at the overlap.

The coiled filler may be of liana, sometimes *zarza* (No. 252), which is said to wear well, despite frequent sousing of urine. Bark of *jonote* (Nos. 25, 100) also is used, but most prefer commercial twine for the coil; it is less durable, but simpler to handle, and replacement is easy.

The man makes the cradle. He holds the oval frame horizontally on his knees and, beginning at the rim, applies the coil without foundation spirally, working clockwise. The stitch is known rather aptly as *tela de araña* (spider web). As the center of the cradle is approached, the interval between stitches is shorter, but none is skipped. Since the form is oval and not circular, there is a gap in the center, which is "laced" together, using the same coiled stitch.

This cradle is superficially similar to that used by the Popoluca (Foster, 1940, pp. 14–15, fig. 7), although from the photograph of the latter the precise type of filler is not evident.

HANGING FRAME

Technically, the hanging frame (*huile*) differs little from the cradle, except that it is circular instead of oval and the filler usually is of *chápiso* root (No. 156), sometimes of *bejuco colorado* (No. 131). This swinging frame is an adjunct of almost every Totonac kitchen and forms a handy shelf on which to store provender. To protect the latter from rodents, a globular gourd is perforated and strung on the cord from which the wheel is suspended.

Today, these frames are poorly woven. One of the neatest we saw in Tajín (pl. 22, *d*) was made by a visitor from nearby San Miguel Pericos. His specimen is illustrated in preference to the model we had made, since the latter is a miniature and the filler is, moreover, twine of *jonote colorado*, instead of liana or *chápiso* root.

CARRYING FRAME

It is said that formerly a coil-filled carrying frame (*huacal*) was used in Tajín. We saw but one fragment, in such an advanced state of disintegration that we could not be sure whether the filler actually had been coil without foundation. It turned out, in any case, that this particular specimen had been made by someone from Santo Domingo, near Coyutla.

According to description, the carrying frame consisted of two oval hoops, filled with coil of *jonote* (No. 25) or of a *Philodendron* (No. 126). The ovals were joined, by the same stitch, on all but one of the long sides, which was left open. Superficially, the frame must have been similar to those still current in the Villa Juárez area and to those carried today by itinerant traders from the Zacatlán district.

NETTING

For good measure, netting may be mentioned here. It has been noted above (p. 79) that three men in Tajín know how to make casting nets. Unfortunately, we did not have opportunity of watching them work, but they are said to employ a diamond-shaped measure of wood and to start work at the "point" or apex of the net. Most nets used in Tajín are purchased in Papantla.

WEAVING

Since early times, the Totonac have been known as producers of cotton and of cotton textiles (Sahagún 3: 129). Hueytlalpan paid tribute to Moctezuma in cloth (Relación de Hueytlalpan), as did Jojupango, later, to her Spanish *encomenderos* (Relación de Jojupango). Jonotla is said to have a brisk trade in cotton and woven materials, from the proceeds of which tribute was paid (Paso y Troncoso 5: 130–131). In "Cempoala," the Totonac "principals" were elegantly garbed in *ricas mantas*, and the latter also figure among their gifts to Cortés (Díaz del Castillo 1: 171).

Too, it is evident that the Huasteca produced highly prized textiles (Sahagún 3: 131–132), which were acceptable to the Mexicans as tribute (Tezozomoc, pp. 110, 129). In fact, a tradition of good weaving appears to be found pretty much along the whole Gulf coast, for the Maya, too, were noted for their excellent woven products (Ponce 2: 390–391). Today, among the Popoluca, whose culture as a whole appears very modest, weaving is described as the "crowning glory" of their handiwork (Foster, 1940, p. 14).

Cotton weaving is one of the few old crafts which has survived in Tajín, and 10 women—all but 3 either middle-aged or elderly—still produce textiles on a belt loom. A few weavers in outlying parcels may have escaped attention, but a relatively small number of women is involved.

Ordinarily, as a young girl, a weaver learns from her mother, her elder sister, or her grandmother. Although the older women complain that girls are not interested in weaving, there are two cases in which a young woman, already adult, has expressed interest and has asked her mother or a friend to teach her. There is a modest but steady demand for hand-woven products in Tajín, but current prices do not make production very appealing from a monetary standpoint.

Both as regards quantity and quality of output, cotton weaving in Tajín is on the downgrade. We were able to purchase a few pieces, made some years ago, and with them current products compare most unfavorably. The older specimens are of handspun thread, finely woven (pl. 30, *c*, *d*), whereas modern textiles usually are of commercial thread, sloppily and coarsely manufactured (pl. 30, *f*, *g*). As a corollary of this decline, relatively little native cotton is grown today. Isolated plants of white lint cotton still are to be seen in house clearings, but the brown lint form has all but disappeared. Since cotton is used primarily for weaving, there is little interest in maintaining the native plant.

TEXTILE PRODUCTS

Today, local woven textiles are limited to three products:

Manteles (mantíliš) (*sic*) (pl. 29).—These are simple squares or rectangles, whose size varies from 33 by 39 to 69 by 92 cm., exclusive of fringe. The smaller ones are used to wrap tortillas. Larger ones serve occasionally as tablecloths or as hand towels (for guests), but their principal use is to cover the contents of the wooden tray which is borne on the head. The cloth is so arranged that the ornamental fringe hangs over the edge of the tray, above the eyes. Commercial cloth may be used as a substitute, but among the women it is rather a matter of pride to use a home-made product. Accordingly, there is a certain demand for the *mantel*.

At spaced intervals, the latter has extra thick weft threads woven into the fabric, which result in a corded effect. Usually, in the course of weaving, these are plucked to form loops or pile on the right side. Such loops are combined in simple designs, either geometric or conventionalized (pp. 231–235). This technique is one widely used in Mexico and often known as *confitillo;* the chances are that it is not native, but introduced.[23]

Sometimes the contrast between the background and design is emphasized by using brown lint cotton for the latter, heavy white thread for the former.

Ordinarily, the *mantel* terminates in simple, short fringe at the end where the weaving was started; usually this is simply twisted or knotted. But at the terminal end, a considerable length of warp is left, which is tied into elaborate and varied fringe (p. 235).

Ruedos (apoštíkat, a·kpuštíkat).—These are long, narrow strips, some almost sashlike. Measurements, in centimeters, of seven specimens purchased at random are as follows: 28 by 70, 32 by 99, 35 by 81, 37 by 83, 37 by 97, 46 by 93, 45 by 88. Some, proportionately wider (43 by 76, 57 by 118), are used as hand towels. The narrower ones are twisted and rolled to form the pad on the head when burdens are carried—water from the arroyo, or the wooden tray with assorted contents. Regardless of proportion or function, the Totonac name is the same.

The *ruedo* is little ornamented. Pile designs are not used. Occasionally brown and white lint cotton is combined, resulting in a sort of shot-color effect, which is very pleasing. Other ornament may consist of a couple of colored stripes, of commercial embroidery thread, woven into each end, or a simple cross-stitch design may be added as a border.

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[23] Information from Irmgard Weitlaner Johnson, who has found the same technique employed in old Spanish textiles.

Fringe is short at one end, and adjacent warps, often pairs, are simply twisted or knotted; on one specimen, the fabric has been overcast to prevent raveling. At the other end, where the weaving terminates, the fringe is longer and receives more attention, occasionally approaching that of the *mantel* in elaborate knotting.

A couple of old specimens made by Luz Valencia are simply knotted at one end. At the other, weaving alternates with one or more bands of loose, unwoven warps (pl. 30, *h*), which form a decorative border. On the illustrated specimen, the loose warps have been caught to the fabric by a stitch similar to our hemstitching, to prevent raveling.

Coladeras (pu·¢íkin, pʌ·sikin).—Tsese are essentially utilitarian articles, either rectangular or approximately square. Measurements, in centimenters, of four purchased specimens are: 37 by 49, 38 by 49, 42 by 48, 46 by 55. Weaving deliberately is open and coarse (pl. 30, *a*). Again, brown and white lint may be combined to give a mottled effect, or a few rows of colored embroidery thread are used at each end as weft. As usual, the fringe is short at one end, longer at the other; the latter is knotted, but quite simply.

MATERIALS

Until recent years, the native perennial cotton, of both brown and white lint, was used exclusively for weaving. The brown lint, incidentally, is not fast color, and after repeated laundering turns a light beige.

With the fingers, seeds are removed from the bolls; in particular, care is taken to extract the tip of the seed, where the fiber is united, otherwise the thread will break as it is spun. The cotton then is fluffed between the hands and beaten. The following accounts of the latter treatment are from description; we have not witnessed the process.

According to Josefina Pérez, once the seeds are removed, the lint is spread on a woven mat, which lies on top of dry banana leaves. With a light wooden wand in each hand, the cotton is beaten until it becomes light and fluffy. It then is doubled and beaten again, successively.

María Loreto gives a similar description. Dry banana leaves are extended carefully on the ground. On top, is placed a woven mat, and on top of it, the cotton. The latter then is beaten with great care, to avoid packing; in time, the cotton spreads until it corresponds to the form and size of the mat. It then is doubled in half and is beaten anew, following which it is folded once more and again is beaten. This process is continued until the fiber forms a small bale. For some obscure reason, at the end of the treatment, the cotton is supposed to emerge in the form of a long, continuous strand, about 3 cm. (in width?), which is rolled into a ball and later is spun.

Nowadays, commercial thread (*hilaza*), purchased in Papantla, serves either as a warp or woof. For the heavy, ornamental weft, a thick, loosely twisted three or four-strand commercial thread is used. It is marketed as *pabilo* and apparently is manufactured chiefly for candlewicks. This, however, is given special treatment. The strands are opened and are respun with the whorl. To splice, fibers of both ends are pulled, until they are soft and spread; then they are twisted together with the fingers and subsequently spun with the whorl.

It is said, and probably correctly, that commercial thread is stronger, involves less work, and now that the cotton plant is scarce, is more readily available. To a certain extent, native cotton still is used, but most weavers prefer commercial threads which greatly reduce the chore of spinning.

A person who wishes to have a textile made, sometimes gives a weaver sufficient cotton for two of the specimens desired. She weaves one for the donor of the fiber, and one for herself; the material used in the latter is considered payment for her labor.

SPINNING

The spindle consists of a short, slender wooden rod, weighted near the base by a perforated clay whorl (lisi·wit) of local manufacture. It is said that in Talaxca dependence is exclusively upon clay or stone whorls found archeologically. We have seen one Tajín whorl which is subconical; another is a disk, about 3 cm. in diameter. On the lower face of the latter are three excrescences, so arranged as to give the impression of a face (fig. 54).

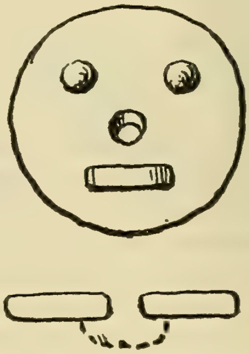

FIGURE 54.—Clay spindle whorl. Sketch of specimen used by Ignacia Hernández. Approximately natural size.

A small pottery bowl or a decorated calabash is placed on the lap, and on its floor the tip of the spindle revolves. The bowl is home-made; the calabash is of dubious provenience. One used by Nicolasa de León is though by her to be from the State of Puebla; the motif is typically Olinalá, although the general effect is somewhat different. We watched three women spin:

Nicolasa de León holds the unspun cotton in the left hand and extends her arm, with the hand almost upright. With the right hand, she turns the spindle, supporting it between the thumb and second finger, and revolving it clockwise with the index finger. It moves rapidly, resting on the floor of the calabash. When a short length of thread has been twisted, she revolves the spindle in the opposite direction, removes her hand, and the thread winds itself on the rod.

Ignacia Hernández holds raveled *pabilo* in her left hand, with the arm almost upright. With the right hand, she twirls the spindle rapidly, clockwise, between the thumb and the first two fingers. Once the whorl is set in motion, it continues for some moments to revolve rapidly without further assistance on the floor of the clay dish, while the hand is removed and is moved upward along the *pabilo*, to feed the latter, without knots, to the spindle. When a short length of thread is completed, the twirling is halted, and the spindle is turned more slowly (counterclockwise?), winding the prepared thread on its shaft. During the winding, the left arm is extended almost horizontally to the side. In short, the left arm is in a nearly upright position as the thread is being formed (pl. 28, *c*), in a horizontal position while it is being wound (pl. 28, *f*).

Carmen Pérez Reyes indulges in less violent arm movements in the course of spinning (pl. 28, *a*, *b*). She twirls the spindle clockwise, both as the thread is being formed and as it is wound on the shaft.

Prepared thread either is wound in balls or on a stick and is stored until required.

WARPING

Before warping, one calculates the length of the textile to be made. Measurement is in terms of "elbows" (*codos*, paka), that is, the distance from the elbow to the middle finger; fractions are expressed by *cuartas*, the distance between the thumb and little finger, with the hand opened wide. A *ruedo*, for example, may be planned at 3 *codos*, plus 1 *cuarta*. Width calculations are based upon the number of warp threads.

Once the approximate length of the fabric is determined, three stakes are set vertically in the ground, within the house or outside. The terminal ones give the over-all length, plus a comfortable margin. The center post is alined, but is only one-third or one-fourth the distance from the first post. Height of the stakes varies with individual weavers; irrespective of the width of the textile, Carmen Pérez Reyes uses posts only 20 cm. tall.

Warping (puλuyunúma) takes place in figure-8 fashion over the three stakes (pl. 28, *g*; fig. 55):

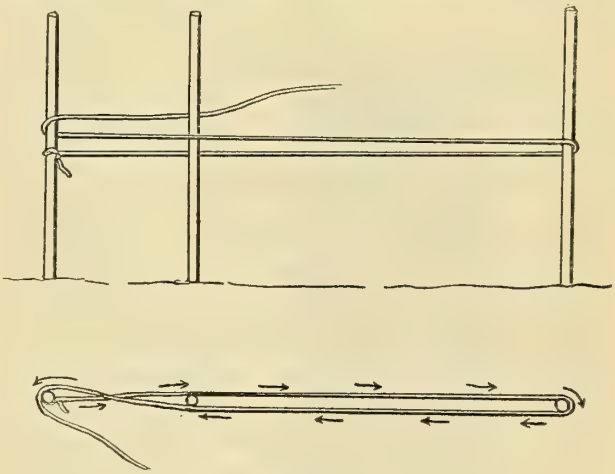

FIGURE 55.—Manner of warping.

María Loreto ties the end of the warp (toyúnu) about the middle of the first stake, which is on her left. Then, as shown in figure 55, she winds the thread until the desired number of warps has been prepared.

Carmen Pérez Reyes follows the same procedure, but starts at the right instead of at the left. Unlike Doña María, who has the thread wound on a short stick, she has hers in a ball, which reposes in a wooden tray, on the ground to her right. One day, during the process of warping, Doña Carmen hastily sent her daughter for a handful of maize kernels, which she tossed into the tray, "to be sure there would be sufficient thread."

When the necessary number of threads has been wound on the posts, a string is passed through the warps on each side of the middle post, and tied loosely, to preserve the figure-8 formation and to prevent tangling.

Regardless of whether the thread is handspun or commercial, at this point it is customary to dip the warp into liquid from the *nixtamal* or into a mixture of ground tortillas and water.[24] This stiffens the threads and simplifies handling, although some women condemn the procedure, saying that it darkens the threads, which do not bleach "until the cloth is almost worn out." The knobbed end sticks of the loom then are passed through the loops of the dripping warp, which still is tied together, and the whole thing is draped over a clothesline to dry.

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[24] The Chinantec are said to daub the cotton with water containing maize paste "during the weaving" (Bevan, p. 81).

LOOM

The belt loom alone is found in Tajín. It is called simply *palos* (sticks) and the usual Spanish term, *telar*, seems unknown.

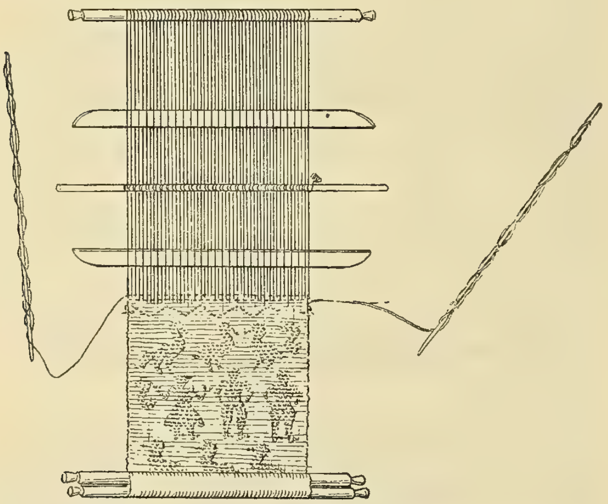

FIGURE 56.—Loom. See text (p. 230) for details.

A sketch of the loom is shown in figure 56. The equipment is simple and is made by any handy man, not necessarily by a carpenter. For the knobbed end sticks, *zapote chico* or *escolín* (Nos. 191, 338) generally is used; for the shed and batten, *alzaprima* (No. 206). The sticks vary in length and weight, and a weaver may have two or three sets, from among which she selects that which best fits the textile she plans to make.

Every loom consists of two end bars (tulúnu) (fig. 56), which are knobbed. A rope is tied to a post or other convenient upright, and each end then is attached to a knob of the bar at the far end of the loom. The bar nearest the weaver rests against her abdomen. A rag or old tumpline passes about her waist, at the rear, and is tied to the knobs of the near end bar (pl. 28, *d*). Weaving is done closer to the horizontal than the vertical.

The batten and shed are of the same shape (fig. 56), both sharpened to a blade along one edge, and both known by the same name (*machete*, makčána [*sic*]). Every loom includes either an additional end bar (fig. 56) or an extra *machete*, whose function is to facilitate rolling the completed fabric and bringing the new work area closer to the weaver. The extra stick is laid on top of the textile, against the end bar which rests on the lap. Both are turned away from the weaver so that the fabric is rolled on them (pl. 28, *e*), and the belt strap is adjusted to the new length.

The heddle (pasʌ́kna) is a light-weight wooden rod, about the same length as the other sticks. A width regulator (štampistúkumu) is similar, but shorter. It does not appear in figure 56, for it is attached to the fabric, beneath the work surface. The ends are perforated to receive the tip of a long thorn, which is thrust through the selvage at either side and into the perforation of the bar. The latter is moved constantly forward, as the work progresses, and seldom is more than 2 cm. behind the current weft. In this way, the textile maintains uniform width.

Another light-weight wooden bar completes the equipment. It is the shuttle (n kwat), on which the weft is wound. If a decorated *mantel*, with pile ornament, is being made, two shuttles are used, one for the light-weight weft, the other for the heavy decorative cord.

SETTING UP THE LOOM

As described above, the knobbed end bars are thrust through the warp; that at the far end is attached to a post or tree, and the near bar is affixed to the weaver's body, by a cloth or strap which passes across the back of her waist. My impression is that the smaller part of the figure-8 which results from the warping is adjacent to the body of the worker, but notes are not specific.

The batten is slipped into place, to separate the warps more definitely into an upper and lower shed, following which each warp of the upper shed is attached to the heddle:

> We watched Carmen Pérez Reyes perform this operation. She inserts a loose thread—embroidery cotton, commercial string, or any soft, but strong cordage—between the two sheds. It enters from the right and is carried through to the left, where it is tied to the last warp. The ball of reserve thread, to which the strand is atached, remains on the ground at her right.
>
> Wrapping the heddle starts at the left. A loop of the thread is lifted with the fingers of the right hand and is pulled to the surface; it is passed over the tip of the heddle and, at the same time, catches one of the warps of the upper shed to it. Looping alternates; for one warp, the thread passes over the heddle toward the

weaver; for the next, away from her. The heddle is held in the left hand and gradually is extended to the right, over the upper shed, as the work progresses. Work proceeds from left to right across the top of the upper shed, and as thread is consumed, the ball on the ground is unwound. Each loop which goes over the heddle is held in place with the index finger of the left hand, to prevent slipping.

Plate 28, *d* shows María Loreto laboriously rigging the heddle. The process is identical with that described above, but she has started at the right instead of the left. This is not her standard practice, but it is many years since she has attempted to weave and some details have escaped her; later, she realized that it would have been easier to have started at the left. Note that she has the batten turned upright, to keep the two sheds well separated.

Once the heddle is set, the shuttle, on which the weft is wound, is thrown through, between the separated warps. The shed is changed and the shuttle thrown back again. Four or five weft threads are inserted thus and are beaten into place with the batten. They are scratched with a small pointed implement (see below) until the threads are evenly spaced.

Next, the loom is turned, so that the four or five rows of woof lie at the far end, and the end bar which formerly reposed on the lap of the worker now is tied to the post. These preliminaries terminated, the weaver now is ready to begin forming the fabric.

WEAVING

Below are listed the successive steps in weaving, beginning just after a newly inserted weft has been beaten home:

1. Batten removed and placed on top of shed bar. Weaver leans forward, releasing the tension on the warp (pl. 28, *e*). Her right hand clutches both shed and batten, which are turned away from the body two or three times, to loosen the warp. At the same time, the heddle is raised with the left hand and the warps attached to it are forced to the upper surface.
2. Batten passed beneath the warps which have just been raised by the heddle.
3. Weft beaten home with batten.
4. Batten turned on end, to make room for shuttle.
5. Shuttle thrown through, between the two sheds.
6. Weft beaten home with batten.
7. Batten removed.
8. Shed (on far side of heddle) turned to vertical position to shift warps, retiring those lifted previously by heddle.
9. Batten inserted and weft beaten home.
10. Batten turned to vertical position and shuttle passed through.
11. Weft beaten home.
12. Batten removed and heddle lifted, as described in first step above.

From time to time, in order to space the threads evenly, the fabric is scratched vigorously with a pick (liswełkniʔ), often a flat, bamboo instrument, about a centimeter in width and sharply pointed at one end. One weaver uses a deer bone (laskniʔ), 8 or 9 cm. long, which terminates in a point; she does not recall where or when she acquired it. It is said that in Talaxca, a thorn or a fish (*sábalo*) bone is preferred.[25]

When not in use, the shuttle may lie across the top of the warps, on the far side of the heddle; on the newly formed fabric, at the waist of the worker; or on the ground. If heavy, ornamental woof is used, there are two shuttles, one for the normal weft, the other for the cordage.

To form a design, the weaver uses the pick to raise a loop of the heavy woof to the surface. She plucks with her right hand, and with the index finger of her left, holds the loop in place until the succeeding one is formed. If the shuttle has been thrown from left to right, and the free end of the *pabilo* is on the right, she starts plucking at the left since, owing to the pile, she must be able to draw additional thread from the shuttle. If the latter has been thrown from the right, she starts at that side. The weft thread not in use at the moment is carried along the selvage, as a loop.

Designs are “carried in the head”; Nicolasa de León claims to be following those used by her mother years ago. Sometimes, at least, threads are counted; sometimes the weaver merely guesses at the distance. Figures of men or animals are built feet first, so that the figure is standing upright when completed.

Sometimes warp threads are double. Other than this, there is no variation of simple under-over weaving. Despite their simplicity, Totonac textiles are very pleasing and some, especially those manufactured a few years ago, are of excellent quality.

WOVEN ORNAMENT

The border of colored thread which, upon occasion, decorates the *ruedo* and the strainer, has been mentioned above. Occasionally *manteles* are similarly adorned, but ordinarily they are all white, or white combined with brown lint cotton. Without exception, they are decorated with geometric or conventionalized motifs, formed by looping the heavier weft on the upper or right side, as the textile is woven. Of *manteles*, we purchased 22 specimens, of which 11 are modern, the others "old"—but probably not more than 10 years at the most.[26] From the discussion below, it will be seen that the decoration of *manteles* appears to have shifted considerably in the course of the past few years; this conclusion, we believe, does not result exclusively from the smallness of our sample.

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[25] The Chinantec are said to use a pointed bone or a cactus spine (Bevan, p. 81).

Borders.—All *manteles* have some sort of geometric border, at the start and finish of the piece. In some cases, this is confined to a simple row or double row of upraised loops (fig. 57, *a*, *a′*); usually, various motifs are combined. Border designs from our 22 *manteles* are shown in figure 57 and their distribution given in table 13.

Several border motifs are found among both new and "old" pieces (fig. 57, *a–c*). Others are confined to the older specimens (fig. 57, *d*, *f*, *g*), while two (fig. 57, *e*, *h*) are to be seen only among current products. One motif (fig. 57, *h*), prominent in the recent *manteles* made by Carmen Pérez Reyes and one of her daughters, has no Totonac name. This, plus the fact that not one of the older specimens carries this design, suggests that it is a recent addition to the local repertoire.

There is one further suggestion of change in border treatment during recent years. Among the older pieces, six have a quite different border at each end; two more correspond in major features but have differences in detail (noted as one-half, in table 13). In short, most of the older specimens have asymmetrical borders, while the more recent products show a greater tendency toward symmetry (table 13).

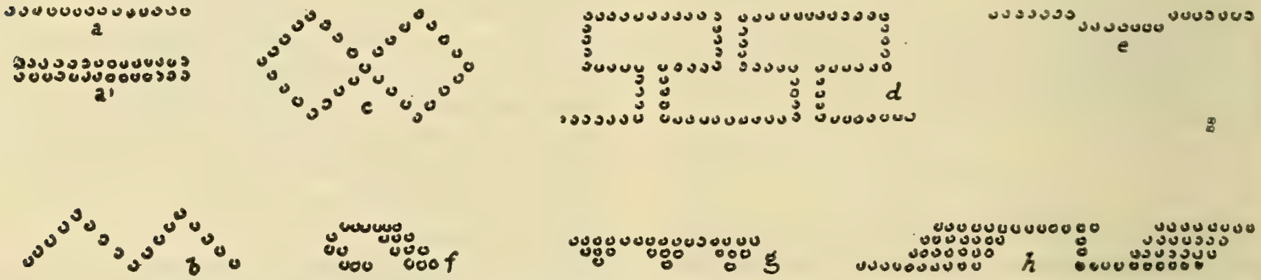

FIGURE 57.—Textile designs: *Mantel* borders. Each circle represents a loop of heavy weft on the right side of the fabric. *a* and *a′* are known as talakašlitʔni; both *b* and *c* are called taskuʔli. No names were recorded for the other designs, save *h*, which goes by the Spanish term of *pemoles*, and which is said to have no Totonac equivalent. The distribution of these elements is given in table 13.

TABLE 13.—*Textile ornament*[1]

Designs	"Old" *manteles*											Recent *manteles*										
	Luz Valencia	Ma. Antonia Méndez			Nicolasa de León	María Hernández	Ignacia Hernández				Carmen Pérez Reyes	Carmen Pérez Reyes						Benita Isidro	Josefina Díaz	Ma. Antonia Méndez	Nicolasa de León	
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Borders:																						
Motifs:																						
Fig. 57, *a*, *a′*	×	×	×	×	----	×	×	×	×	×	×	×	×	×	×	×	----	×	×	×	×	----
b	----	×	----	×	×	----	----	----	×	----	----	×	----	----	×	----	----	----	×	----	----	×
c	----	----	×	----	----	----	----	×	----	----	----	×	----	×	----	----	----	×	----	×	----	----
d	----	----	----	----	----	----	----	----	----	×	----	----	----	----	----	----	----	----	----	----	----	----
e	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	×	----	----	----	----	----
f	×	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
g	----	----	----	----	----	----	----	----	----	----	×	----	----	----	----	----	----	----	----	----	----	----
h	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	×	×	----	×	----	----	----
Asymmetrical	×	½	----	½	×	----	----	×	×	×	×	×	----	----	----	----	½	----	½	----	×	×

[1] Decorative elements are listed at the left, with references to corresponding text figures. Individual textiles, all of which are in my possession, have been numbered to avoid ambiguity.

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[26] Eight weavers are represented: Carmen Pérez Reyes, 7 specimens; Ignacia Hernández, 4; María Antonia Méndez, 4; Nicolasa de León, 3; and Luz Valencia, Benita Isidro, Josefina Díaz, and María Hernández, 1 apiece. Owing to an arm injury, María Antonia Méndez no longer weaves, nor does Luz Valencia, because of age and infirmity.

There is a high degree of interdependence among most of these eight women. Benita Isidro and Josefina Díaz are daughters of Carmen Pérez Reyes; she taught them, as well as María Antonia Méndez, a neighbor, to weave. Ignacia and María Hernández are sisters; Nicolasa de León is their sister-in-law; all three live in adjacent houses.

TABLE 13.—*Textile ornament*—Continued

Designs	"Old" *manteles*											Recent *manteles*										
	Luz Valencia	Ma. Antonia Méndez			Nicolasa de León	María Hernández	Ignacia Hernández				Carmen Pérez Reyes	Carmen Pérez Reyes						Benita Isidro	Josefina Díaz	Ma. Antonia Méndez	Nicolasa de León	
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Fillers:																						
Motifs:																						
Fig. 58, *a*										×												
b							×			×												
c									×													
d											×											
e					×																	
f																		×	×	×		
g																		×				
h																		×				
i				×																		
j																		×				
k																		×				
l																×						
m											×											
n																			×			
o																		×				
p																		×				
q											×											
Shape indeterminate																					×	×
Major motifs:																						
Geometric:																						
Fig. 59, *a*		×																				
b	×																					
c									×													
d	×		×		×			×					×				×					
e																						×
f																					×	
g				×																		
Human:																						
Fig. 59, *h*														×	×				×			
i											×											
j														×								
k															×	×		×	×	×		
Plant:																						
Fig. 59, *l*												×										
Birds:																						
Fig. 60, *a*										×												
b						×																
c		×			×			×			×	×		×						×		
d									×													
e															×	×		×	×			
f							×			×												
g														×	×			×	×	×	×	×
h																						×
i							×															
j		×																				
k						×		×														
Other animals:																						
Fig. 61, *a*														×		×						
b																			×			
c							×				×											
d																						×
e			×																			
f				×							×											
g					×					×												×
h																				×		
i														×								
j												×										
k															×						×	
l						×																
m		×																				
Indeterminate:																						
Fig. 59, *m*																					×	
Fringe:																						
None									×			×										
Knots:																						
Fig. 62, *a*			×																			
b																					×	
c						×																
d							×	×		×	×		×									
e	×	×																				
f														×	×	×	×	×	×	×		
g				×	×																×	×

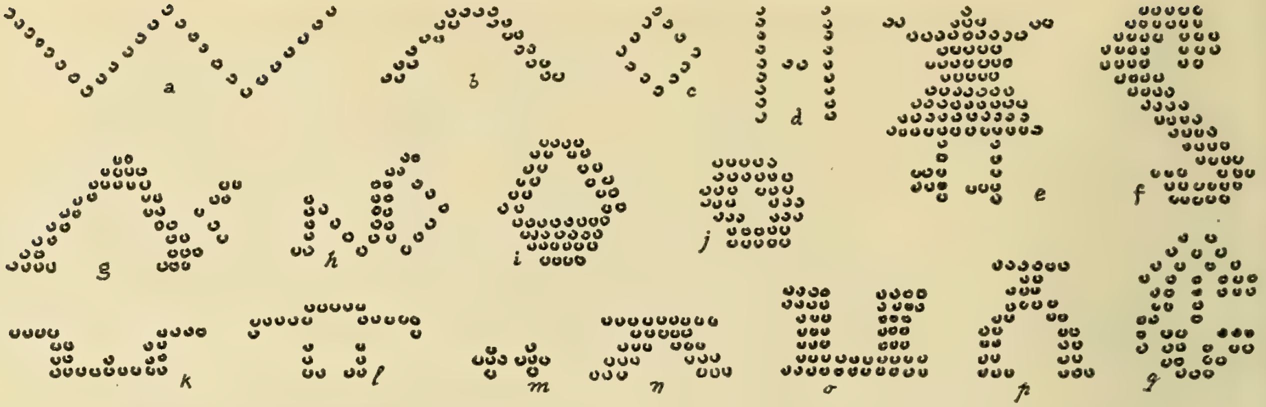

Figure 58.—Textile designs: *mantel* fillers. None is named. The distribution is shown in table 13.

Fillers.—Simple geometric designs, usually symmetrical, but sometimes amorphous (fig. 58, *h, q*) often are used to fill the space between major motifs. Frequently, this space evidently has resulted from miscalculation in placing the major designs. Fillers are used in both old and new lots, but the motifs are quite different. Some fillers (fig. 58, *a–e, i, m, q*) are confined to the older specimens; others (fig. 58, *f–h, j–l, n–p*) occur exclusively among new products.

Major motifs.—Sometimes the major designs are geometric (fig. 59, *a–g*); they likewise show perceptible differences between old and new textiles. Only one motif (fig. 59, *d*) occurs in both lots (table 13); among the older specimens it is a discrete design; among the newer, an all-over pattern.

Conventionalized humans (fig. 59, *h–k*) appear to be essentially recent, although one old specimen, woven by Carmen Pérez Reyes, has the figure of a woman, apparently holding a flower (fig. 59, *i*). Among recent *manteles*, the human figure is confined to specimens made by this same weaver, by her two daughters, and by a woman said to have received training from her. In other words, con-

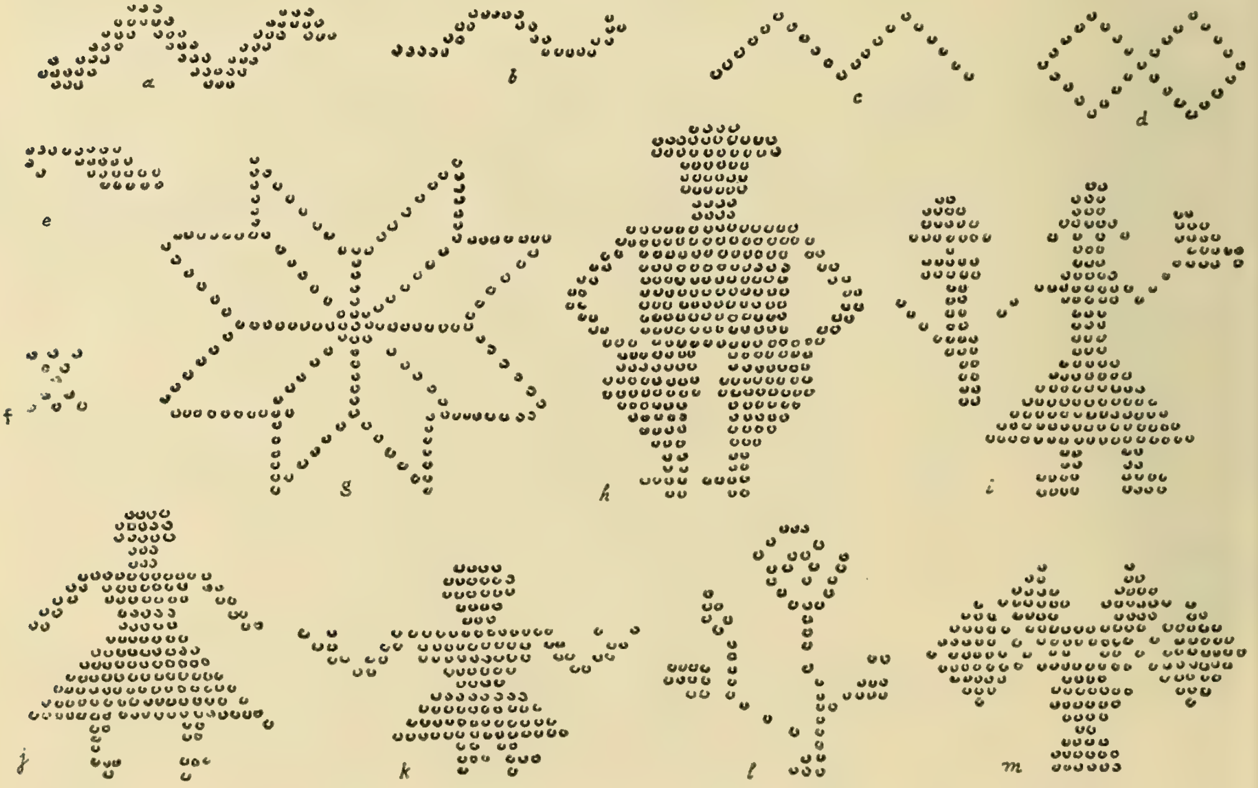

Figure 59.—Textile designs: Major *mantel* motifs. *a–g*, Geometric; *h–k*, human; *l*, plant; *m*, indeterminate. Names were recorded for only two designs (*i*, *muñeca*, doll; and *l*, šanat, flower). The occurrence is given in table 13.

ventionalized human figures seem to be rather recent and limited to what might be called the Pérez Reyes school.

One *mantel*, woven during our stay, has a plant motif (fig. 59, *l*). Another design, (fig. 59, *m*), is not readily identifiable; it may have been inspired by the double-headed eagle (cf. fig. 60, *j*, *k*).

Bird figures are popular (fig. 60; table 13) but, for the most part, the more elaborate designs are old. In some cases, a simplification of the older motifs is evident; for example, figure 60, *e* and *g*, found only among newer textiles, apparently are derived from figure 60, *c*.

Other animal forms are shown in figure 61. Again, the more elaborate patterns (fig. 61, *c*, *e*, *f*, *m*) tend to occur among the textiles woven some years ago (table 13).

In summary, there seems to be a certain time difference in the ornament of *manteles*. Border treatment differs; filler motifs are entirely distinct. Moreover, there have been shifts in major motifs. Some of the older designs apparently have been abandoned; others have been modified; and a number of new design elements evidently have been introduced.

It seems probable that, as a whole, these designs are to be considered European. Embroidery produced by the Totonac during the late nineteenth century certainly seems to be European-inspired and, as noted above, even the technique of producing designs by raising the weft to form a pile, probably is of Spanish introduction (ftn. 23, p. 227). In short, presumably we are dealing largely with European traits—perhaps introduced long ago—but traits which have been revamped in the local milieu.

FRINGE

All but 2 of our 22 *manteles* have the warp ends tied in fringe, at least at the end where the weaving terminates. At the initial end, one specimen (No. 19) has no loose warps. Most have them simply gathered in small clusters and twisted to form threads of several strands, which are not knotted.

However, at the terminal end, the fringe may be quite elaborate (pl. 31; fig. 62). Several adjacent warps are handled as if they were a single thread, being tied in groups of two (fig. 62, *a*, *b*) or of four (fig. 62, *c*–*g*). Rarely is more than one kind of knot found on the same specimen (table 13).

The various clusters of warps are tied close to the fabric. Then the strands are divided; half are passed diagonally to the left, and half to the right, where they are tied anew, with strands from adjacent knots; the result is a sort of lattice work (pl. 31). As a rule, the same knot is repeated throughout. In one case, the same knot (fig. 62, *g*) has been repeated several times, without dividing the warps, and thus forms a series of strips (pl. 31, *e*) which resemble work generally known in Mexico as *macramé*. Occasionally, separate miniature tassels give a finishing touch to the fringe (pl. 31, *a*, *c*, *d*).

In addition to the specimens listed in table 13, knots *e* and *f* of figure 62 sometimes appear on textiles other than *manteles*. We have five *ruedos*, all tied with *e* (one each by Ignacia Hernández, Carmen Pérez Reyes, and María Loreto, and two by Luz Valencia). Two specimens woven by Luz Valencia are too wide to fall within the typical *ruedo* group, and one informant suggests they might be considered towels (*toallas*); both are knotted with *e*. In addition, three *coladeras* have knotted fringe; one, by Luz Valencia, has knot *e*; two, by Carmen Pérez Reyes, knot *f*.

Of the various knots shown in figure 62, there seem to be marked individual preferences; out of the total of seven, no weaver seems to employ more than three. *d* is particularly favored by Ignacia Hernández, who however, has used *e* on a specimen not included in the table. Carmen Pérez Reyes uses *d* and *f* on *manteles*, *e* on an unlisted *ruedo*, and *f* on two *coladeras*. She appears to favor *f*, and both specimens made by her two daughters likewise show this same knot. María Antonia Méndez uses *a*, *f*, and *g*, while Nicolasa de León employs chiefly the latter; in once case, she has combined it with *b*.

In our small sample of 22 pieces, *a*, *c*, and *e* are confined to the older specimens; *b* and *f*, to the newer ones; *d* and *g* appear in both lots.

EMBROIDERY

A few decades ago, Totonac women wore elaborately embroidered costumes; today, embroidered blouses, and sometimes skirts, are popular, especially for fiesta wear. At present, only the decorative aspect will be considered; a discussion of clothing in general will be reserved for Part 2 of this monograph.

Some of the embroidered skirts made and worn by Totonac women during the latter years of the nineteenth century and the early years of the present, are extremely handsome. They are simple, sacklike affairs, open at top and bottom; most are of commercial muslin, but an occasional one is hand-loomed. Embroidery is particularly heavy about the bottom but usually extends, although less densely, over most of the skirt. The few examples

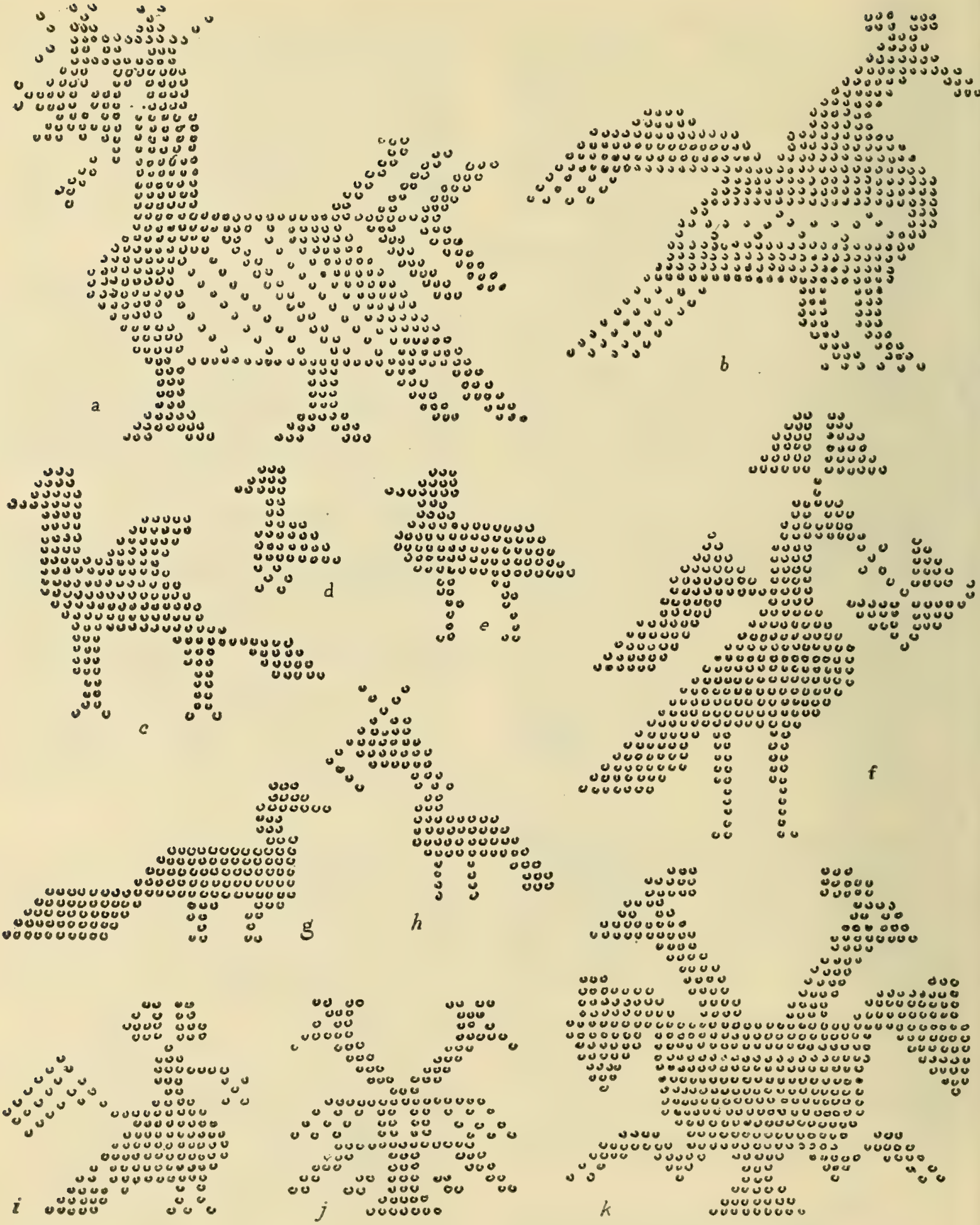

FIGURE 60.—Textile designs: Major *mantel* motifs. Bird forms. *a*, Presumably represents a turkey; *c* is considered a kind of dove (*torcasa*); *g* is identified by one informant merely as a bird (*pájaro*) by another, as a dove (*paloma*). The distribution is shown in table 13.

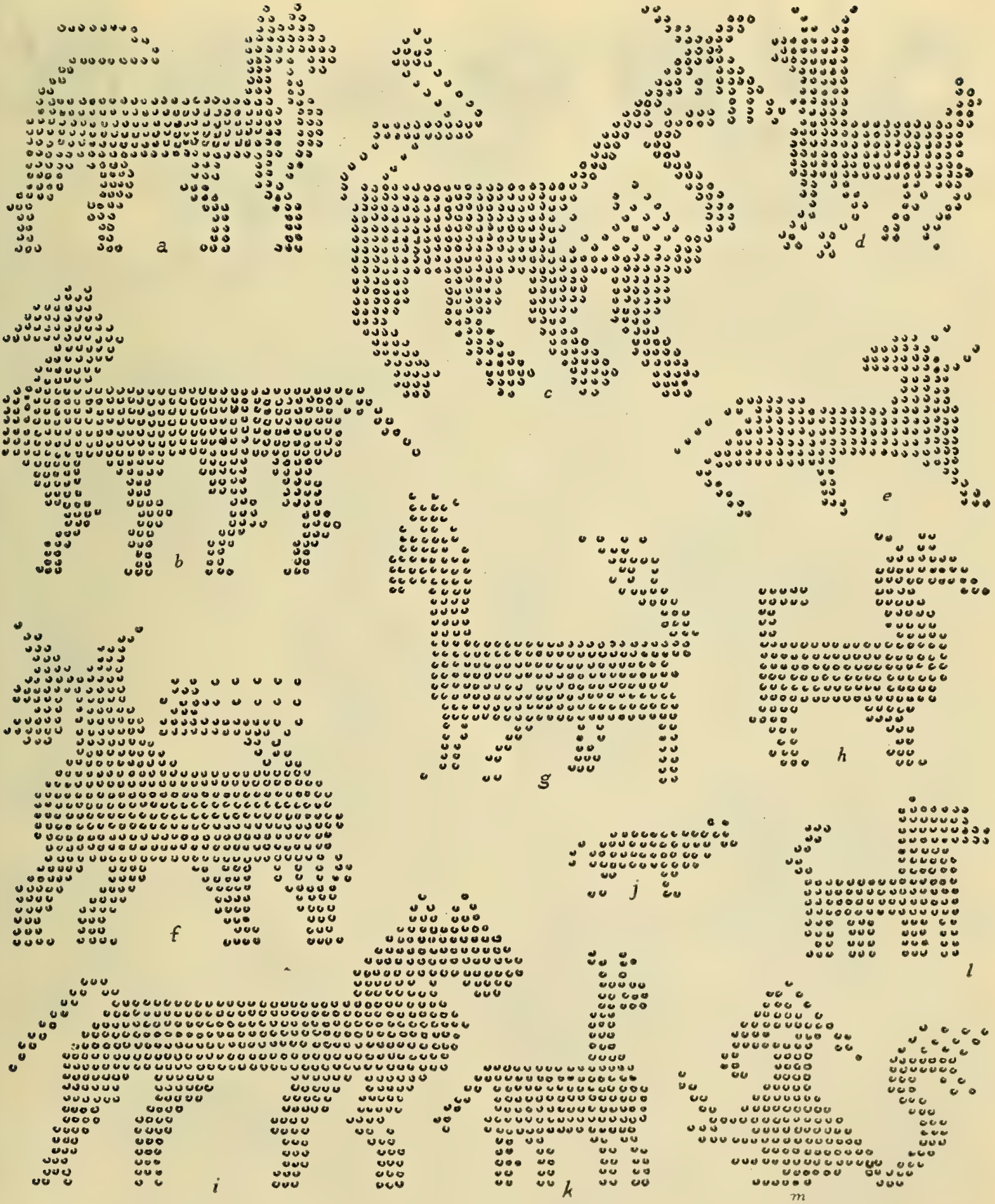

Figure 61.—Textile designs: Major *mantel* motifs. Various animal forms. *a–c* are felines (*a*, *b*, *onza*; *c*, *tigre*). *d* is a deer and *e* probably is the same; *f* is said to be a fox (*zorra*); *g*, a dog (*perro*); *h*, a sheep (*borrego*); *i*, a horse (*caballo*). Names were not recorded for the remaining designs. The distribution of these elements is shown in table 13.

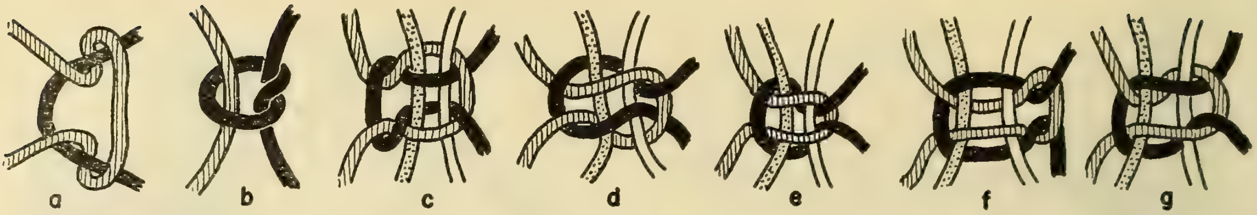

FIGURE 62.—Fringe knots. *a* and *b* are based on two strands, *c–g*, on four; all are viewed from the right side of the fabric. The distribution of these knots among our 22 *manteles* is given in table 13.

we have seen[27] are embroidered either in red or blue. There appear to be two major styles: one with angular design, depicted chiefly in cross-stitch and satin stitch (figs. 63–67); and the other, with floral, curvilinear motifs based on satin and outline stitch.

Of the embroidered skirts, only one appears to have survived in Tajín; we were allowed to photograph it (pl. 32, *a–d*), but the owner refused to sell, inasmuch as she planned to be buried in the garment. On the whole, its decorative aspect is quite European, as is that of the designs shown in figures 63 to 67. Craftsmanship is excellent. Satin stitch, cross-stitch and variants, as well as a couple of other stitches which we did not identify, are represented in the photographed skirt.

It is difficult to say to what extent items other than skirts were embroidered in former times. We have one *ruedo*, by no means ancient, but which evidently has seen considerable use. At each end, it has a simple cross-stitch design (pl. 33, *a*, *b*), which at one end, is flanked by a narrow border in different stitch (pl. 33, *b*).

Today, embroidery falls far below the standards of 40 and 50 years ago. About the best work done at present is darning over a drawnwork background. The threads of the area to be treated (as for example, the yoke of a blouse) are pulled, as in hemstitching, leaving small squares of solid material, surrounded on all sides by a determined number of loose warps and wefts. The edges of the area are whipped to prevent raveling, and the whole drawn-work zone likewise is caught with common sewing thread (working diagonally), to keep the small squares intact. The result is a sort of checkerboard, alternating solid and open squares. On this foundation, in darning stitch, colored threads, in various patterns, are added (pl. 33, *c*). Sometimes the darning runs with the warp, sometimes with the weft.

Darning over a drawnwork background seems to be used only for women's blouses—the square yoke at the neck, and the sleeves. When the material is of good quality, the colors nicely combined, and the sewing neat, the result is very attractive. Often, however, the muslin is shoddy, the combination of colors inharmonious, and the sewing untidy. The background lends itself to cross-stitch patterns, and sometimes folders with commercial designs are consulted. But many of the women are unable to count with sufficient skill to place the designs symmetrically.

A little cross-stitch is used today—for blouses, and occasionally as a very simple border on a muslin skirt. We watched a couple of girls, who had learned in the school a few years before, struggle with an excessively simple cross-stitch pattern. They worked without semblance either of skill or pleasure, using a commercial embroidery hoop but no thimble.

Satin stitch, outline stitch, wheat stitch, and blanket stitch (pl. 33, *d*, *e*) all are used to ornament blouse yokes and sleeves. Sometimes patterns are copied from commercial embroidery pamphlets; that shown in plate 28, *d*, was drawn by the brother of the woman who did the embroidery. Outline stitch, in various colors, may depict a bold floral design on a muslin skirt which, on

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[27] Sra. Antonia Vargas de Campos, of Papantla, has a small but very attractive collection of old Totonac textiles, including several skirts. Most amiably, she permitted me to photograph extensively, and we had counted on the pictures for information concerning designs. However, upon returning to Mexico City, my purse, containing the rolls of undeveloped film, was stolen. Owing to this loss, first-hand comments concerning the Vargas collection must be confined to general impressions.

However, in 1935, Prof. Mateo Saldaña, of the Museo Nacional staff, was in Papantla and Tajín. At that time, he sketched the designs of several specimens in the Vargas collection and generously has permitted us to reproduce them (figs. 63–67).

Totonac skirts of several decades ago now are prized by mestizo girls in Papantla, and it is quite the vogue to be photographed in one, while clutching a few vanilla pods or holding a Tehuantepec painted gourd. Accordingly, from time to time, in Papantla, copies of old skirts are made, by and for non-Totonac women.

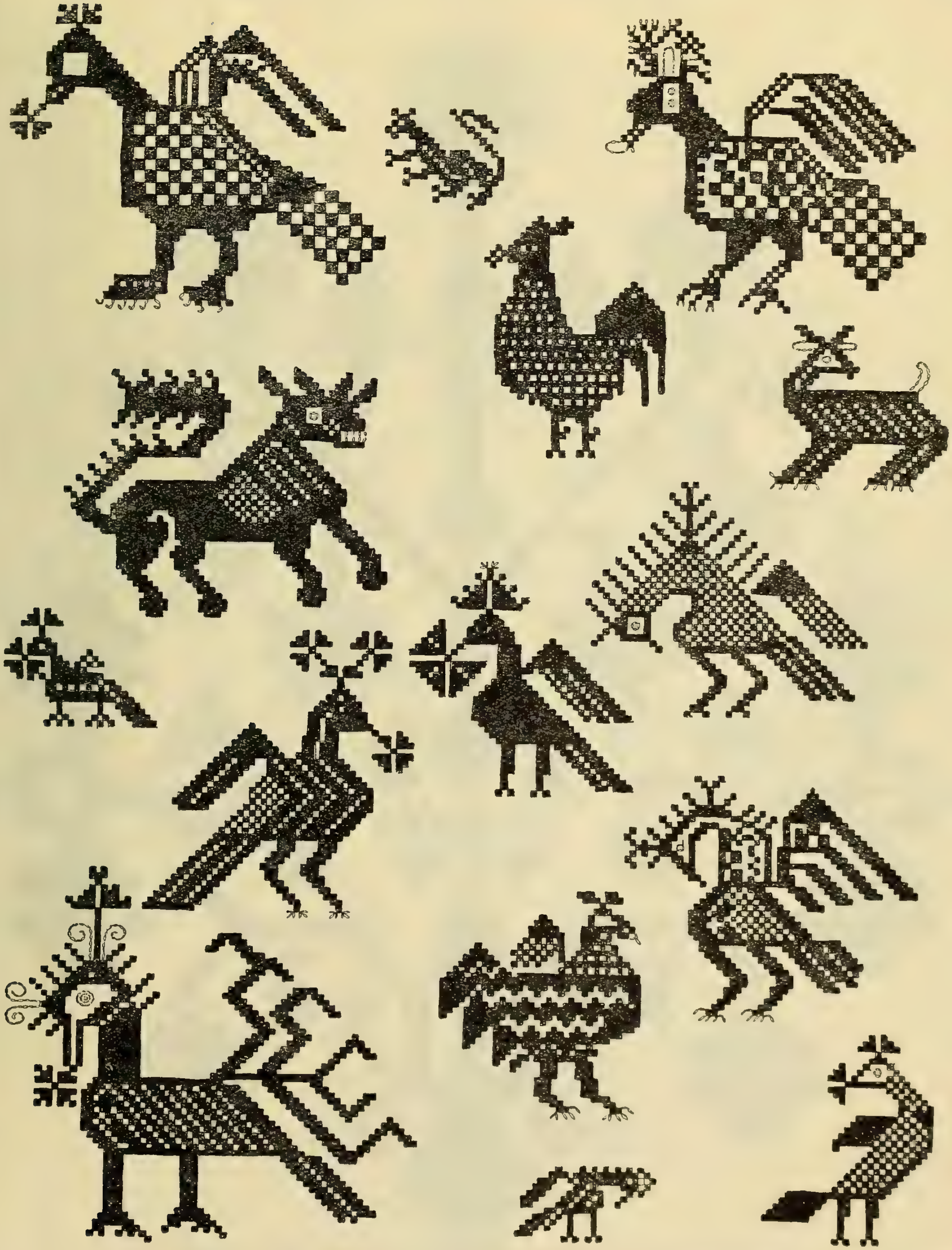

FIGURE 63.—Embroidery motifs. Individual designs. Sketched in 1935, by Prof. Mateo Saldaña, from "old" Totocan skirts in the collection of Sra. Antonia Vargas de Campos, of Papantla.

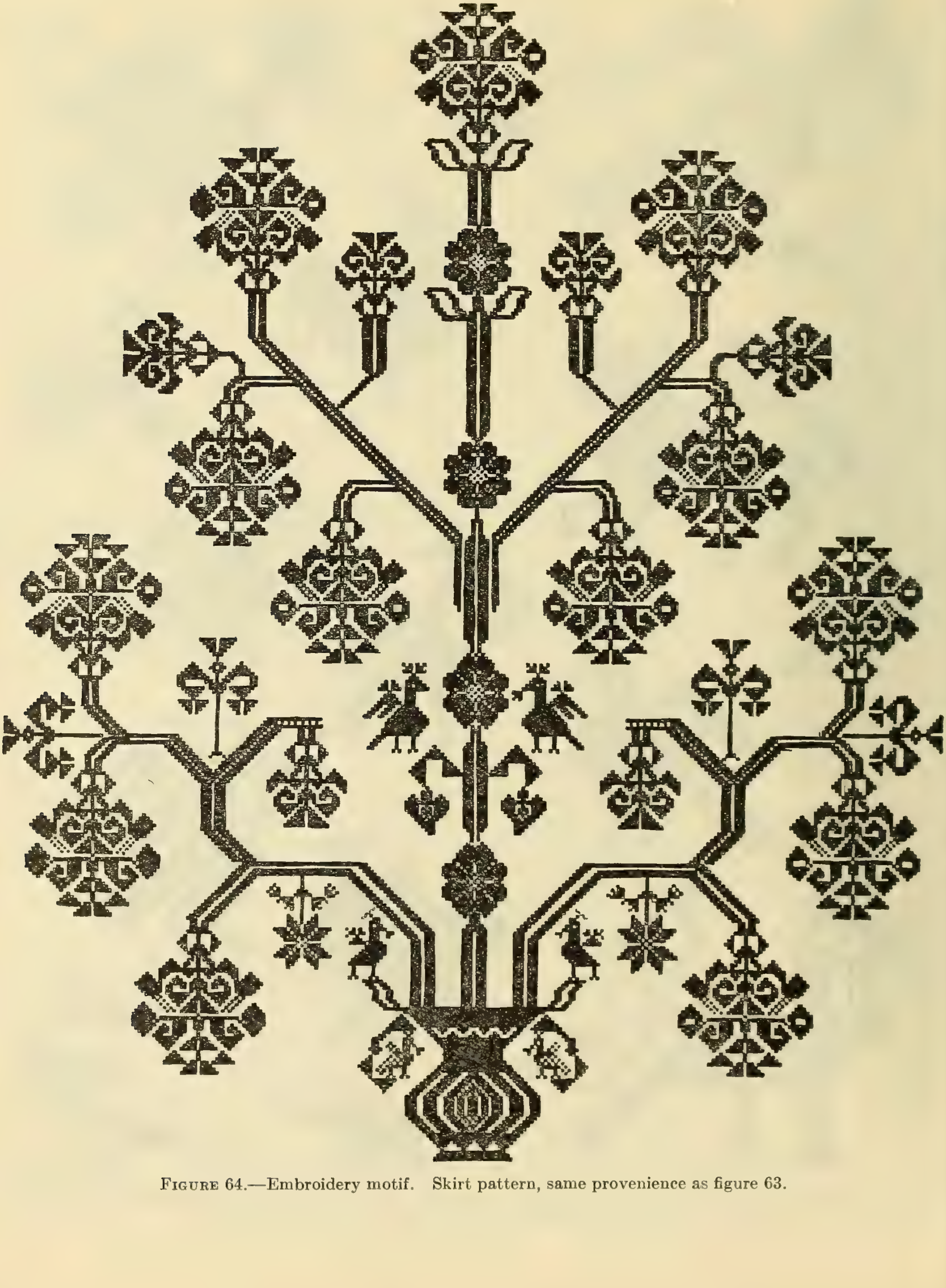

Figure 64.—Embroidery motif. Skirt pattern, same provenience as figure 63.

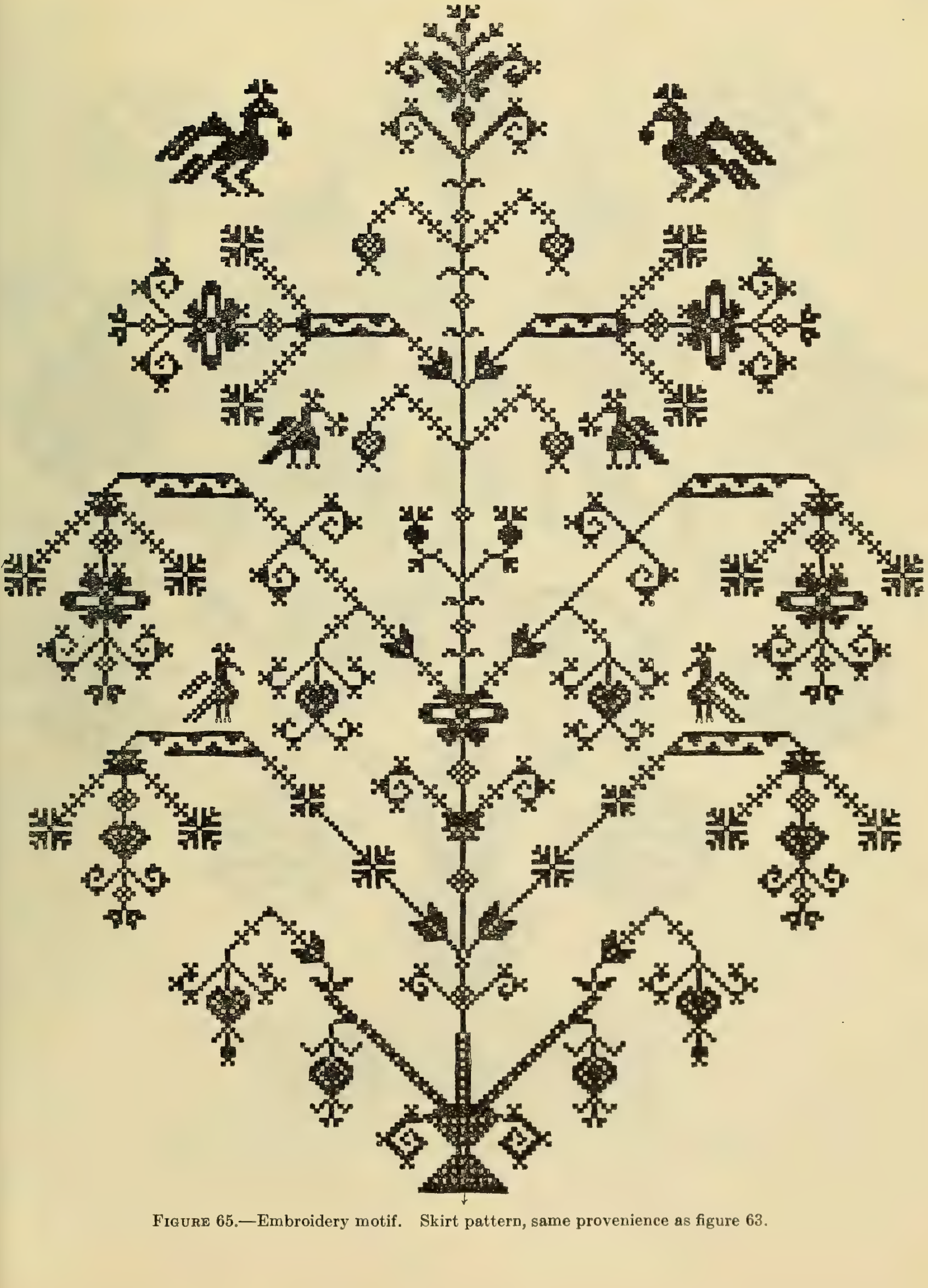

FIGURE 65.—Embroidery motif. Skirt pattern, same provenience as figure 63.

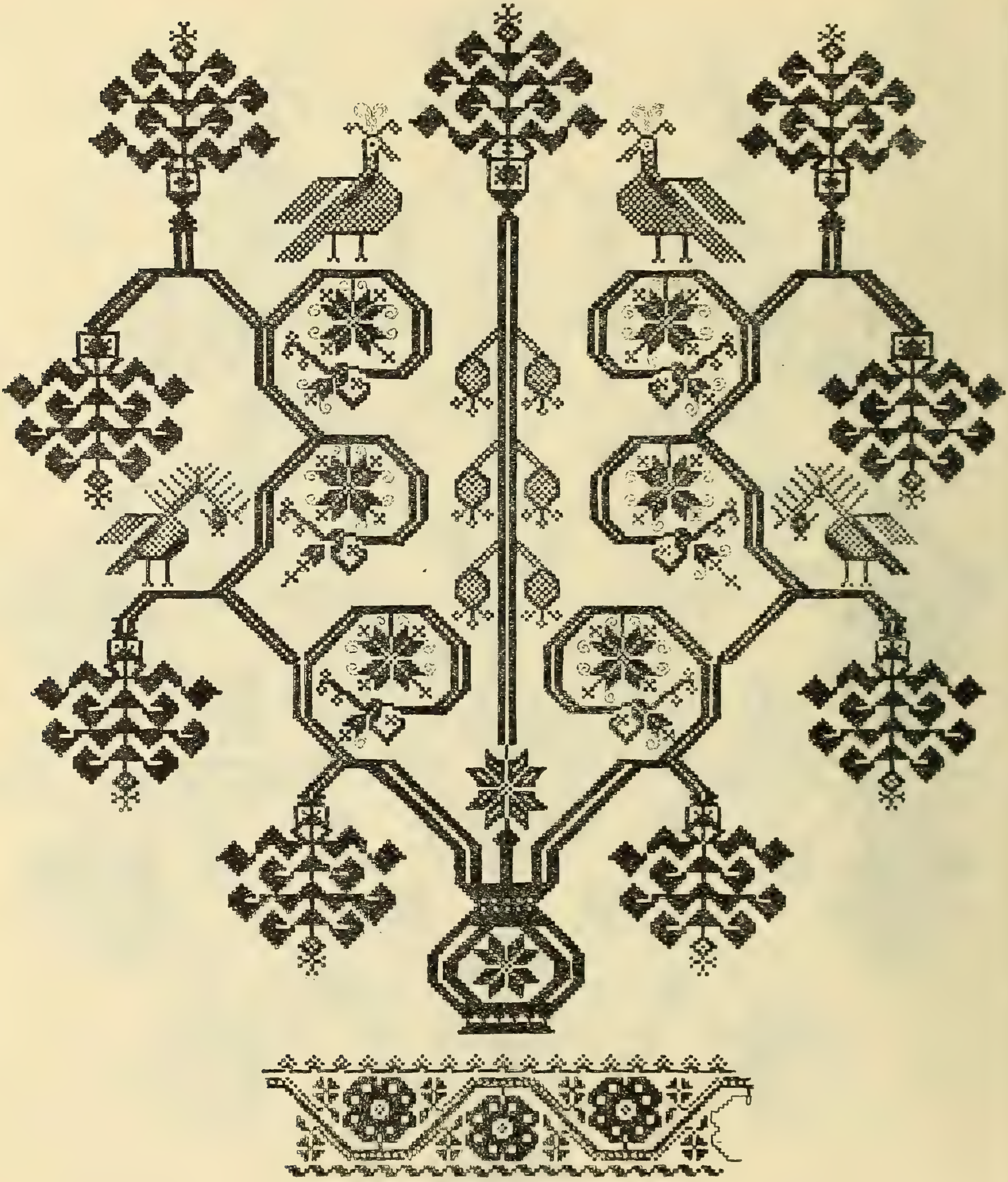

Figure 66.—Embroidery motif. Skirt pattern, same provenience as figure 63.

special occasions, is worn beneath the organdy overskirt.

A unique specimen, best considered embroidery, apparently simulates the handwoven *mantel*. The background is a flour sack, or some similar commercial product. On it, designs have been formed by looping *pabilo* thread on the right side, with a needle. The result is basically the same as our candlewick work (pl. 33, *f*).

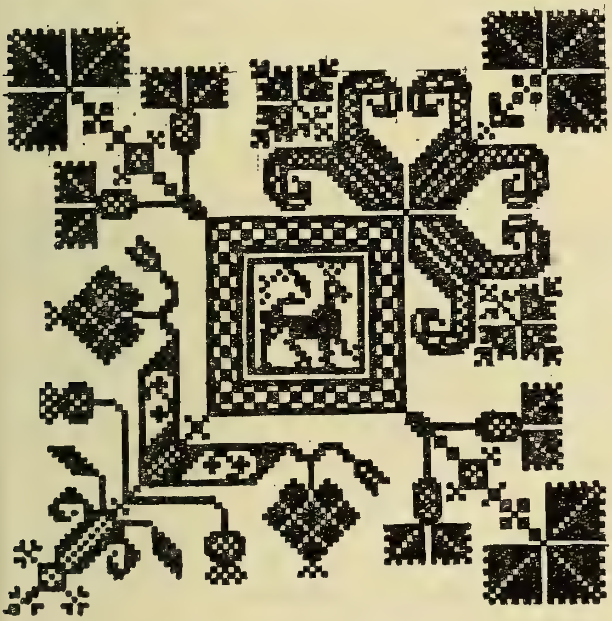

FIGURE 67.—Embroidery motif. Skirt pattern, same provenience as figure 63.

Knitting is unknown in Tajín. Some women finish the neck of the blouse with a simple crocheted edge in shell stitch; and young men may apply a similar border to the "silk" handkerchief worn at the neck. More elaborate crochet is not attempted.

For good measure, it may be added that although the Totonac of the sixteenth century apparently made feather ornaments, such as head crests (Oviedo 3:259), there is no work in feathers today.

DYES AND ADHESIVES

Today, native dyes are little used in Tajín, but several dye plants are recognized.

Four plants are known to the Totonac by individual names but are lumped under the Spanish term, *capulín;* the fruit of three of these (Nos. 21, 41, 85) is considered a source of black dye.

Chuchurutana (No. 46) produces a yellow dye, said to be fast color. One informant recommends using the fresh blossom; another says it should be dried. The flower is boiled, turning the water a brilliant yellow, following which the cloth is added. The plant is said to grow "anywhere," that is, it does not cluster about inhabited areas.

Fustic (*moral*, No. 324) provides another yellow dye. One woman boils small chips of the wood to extract the color; then adds the article to be dyed. A man recommends using scrapings from the heart of the wood instead of chips.

A green dye, not fast color, is obtained by boiling cloth with the leaves of *quitacalzón* (No. 29).

Blue is derived from *muitle*. The leaf or an entire spray is placed in water and cloth boiled with it until it turns blue. Shirts for infants sometimes are thus colored, to cure the child of crying. "If a baby cries all the time, it has *malviento* (a magical infirmity), but with a blue shirt, it stops crying."

Concerning *muitle*, there is a great deal of confusion. Several informants distinguish three kinds: red (*colorado*), purple (*morado*), and blue (*azul*), from which dyes of corresponding color are obtained. There is, moreover, casual mention of a black and a green *muitle;* the latter may be the same as the blue; and the former may refer to the purple. However, one woman claims that the purple *muitle* dyes blue: "One puts a spray in the water and the latter turns purple; but cloth which is boiled in it is blue."

We collected three specimens of *muitle* (No. 45), for which the same native name was given, and for all, the taxonomic determination was the same. In one case, four different informants inspected the plant; three considered it *muitle colorado* (or *rojo*), one, *morado*. One woman says frankly that she cannot tell the plants apart: "The leaf is the same; the flower might be different, but I am not sure; one knows the color of the dye only by boiling the plant."

In short, it would appear that there are at least two local plants, both known as *muitle*, and both bearing the same Totonac name. One results in a blue dye, the other in a red; it is quite likely that there is still a third, which produces a purple dye. *Muitle*, incidentally, is said to occur only in the vicinity of habitations.

Red *muitle* is used to dye pink or red. A child's clothing may be colored with it as protection against an infirmity known locally as *alferecía* (not epilepsy, as dictionaries indicate). Red *muitle* also serves to color *coyol* palm nuts, sometimes sold on the streets of Papantla.

Strangely, the famous red dye plant, *Bixa orellana* L. (No. 78), is not used in Tajín as such, but is cultivated because of its medicinal properties. One informant, of experimental turn of mind, claims to have noticed that *sangregado* (No. 239) exudes a red sap, when cut. He reports having tried unsuccessfully to dye clothing with it (cf. Standley, p. 615), but found it satisfactory as a wood stain.

A color variously described as blue or green was obtained in former times from a wild shrub called limaštákan (No. 314); unfortunately, our specimen is not determinable. María Loreto remembers that years ago, in Talaxca, her mother boiled the leaves of this plant with clothing; or she boiled them and smeared the color on the exterior of home-made clay pots. The result, she says, was fast color, and varied between blue and light green. Precisely the same procedure is described, from hearsay, by a Tajín informant.

It is interesting to note that the Totonac name for the *zapote reventador* (No. 167) is translated as "thing for painting or writing." The informant who called this to our attention suggests that it should produce a "dye or ink." Today, the tree is regarded as of no utility, but the native term is suggestive.

One informant speaks longingly of *añil* (indigo), which was used as a dye in her youth. However, she claims that it was available in three colors—red, blue, and black. Upon questioning, it would appear that she calls any fast-color dye *añil;* the latter has no Totonac equivalent.

Several different adhesives are in current use in Tajín. A "cement" is made by mixing three ingredients: (a) lime; (b) *nejayote* (liquid drained from the maize, which has been steeped with lime, to produce *nixtamal*); and (c) *cachaza* (the froth which forms on the surface of boiling cane juice). This mixture is used to mend local pottery, particularly a piece which is damaged during firing; it does not serve for the glazed vessels imported from the highlands.

Any receptacle which is not to be used on the fire may be repaired with *atakawite*, the hard, black gum with which the native bee seals the apertures of its hive. The gum is softened against a coal and then is smeared over the break.

To stick papers together, the milky sap of three local plants commonly is employed: *chaca* (No. 228), *higuera* (No. 222), and *bejuco sarnoso* (No. 305). A small incision is made and the sap collected in a leaf. These local "pastes" are greatly in demand when altar decorations are being made, and at Christmas, when it is popular to make fancy lanterns of tissue paper, over a cane frame. The sap of the *chaca* also is used to apply bits of green leaves to the temple, to cure headache.

METALLURGY

All along the Gulf coast, from Tabasco to San Juan de Ulúa, Cortés met Indians who were provided with a certain amount of worked gold, although, in no case, were the Spaniards overwhelmed with the value of the booty. As a matter of fact, Díaz del Castillo (1:85) states flatly that in "the province of the Río de Grijalva" and all its vicinity, there was no gold, except for "very few jewels" which the Indians had from their predecessors. He also notes (1:91) ruefully that in the general vicinity of Coatzalcoalcos, the Spaniards traded enthusiastically for copper axes, in the fond belief that they were of gold.

The Totonac may not have been lavishly supplied with gold in pre-Cortesian times, but it is said that certain coastal pueblos, including "Cempoala" and "Quiahuixtlan," gave gold (dust) in canes to the Tlaxcalans for their promise of aid against the Mexicans. Moreover there is the description of an extravagant gift sent the Mexican ruler, Axayacatl, from "Cempoala":

> They gave [the messengers] a fly chaser (*amosqueador*) of very rich feather[s], long and wide, for their king; it had in the center a sun of gold, surrounded by rich stonework of emeralds [*sic*], and above the head of the sun, like a hat, a diadem of amber which shone; and an armlet of gold, with much rich feather work; and a hair piece. The arch was of tortoise, and the hair braided with a gilded thong, with borders of small gold bells [Tezozomoc, p. 218].

At the time of the Spanish contact, the Totonac embassy sent from "Cempoala" to greet Cortés is said to have worn gold ornaments:

> And they bore large perforations in the lower lips, and in them some disks of stone delicately tinted blue,

> and others with thin leaves of gold; and in the ears, very large openings, in them other disks with gold and stones . . . [Díaz del Castillo 1:160].

There is further mention of gold labrets, which seem to have been common, and of a gift, including "gold jewels" and textiles, which the chief of "Cempoala" had prepared for Cortés, but which Díaz del Castillo (1:171) considered of slight value. However, a contemporary source describes the gift from the chief of "Cempoala" as consisting of "a sun, made of gold, as large as a cart wheel and as thick as a fist, and a moon of silver, also as large and thick as the sun, as well as many containers of gold, a gold lobster (*cangrejo*), armlets, head pieces (*cascos*), disks, all of gold . . ." (Nueva noticia, p. 9). Oviedo (3:259) likewise describes the two great wheels, one of gold, the other of silver, and mentions "many jewels of gold and silver," which he claims actually to have seen later in Seville.

In short, it would appear that at the time of the Spanish Conquest, the Totonac had a certain amount of precious metals, although we have come upon no mention of copper. It is not possible to give the source of the metals, but it is evident that there are deposits of gold and silver, and to a lesser extent, of copper, on the borders of old Totonacapan (Ramírez, pp. 545, 546, 589, 592, 593). It may be assumed that the Totonac knew how to work metals, because the use of gold ornaments seems to have been too general to have depended upon trade. Nevertheless, as far as we know, metal artifacts have not appeared in archeological sites definitely identified as Totonac.

Today, in Tajín, there is no knowledge of metalworking. Gold ornaments are esteemed and generally form part of the gift given every bride, but they are made commercially, in Papantla; the Totonac do not wear silver jewelry.

WEAPONS

Since Totonac-Spanish relations were essentially pacific, the early sources make little mention of weapons. However, in the course of the difficulties in which Escalante became embroiled, when left in charge of Villa Rica, the friendly pueblos of the highlands, presumably Totonac, were asked to come with "their arms, which were bows, arrows, lances, shields"[28] (Díaz del Castillo 1:344). For Zacatlán, there is a definite statement concerning weapons, which included "sharp sticks and bows and arrows"; warriors fought naked except for "long *mantas*" which covered the genitals (Relación de Zacatlán). The Totonac of Jonotla claimed that their war weapons were stones and *macanas* (the well-known Mexican obsidian-studded clubs) (Paso y Troncoso 5:128). Late sixteenth-century informants at Misantla claimed piously to be a peaceful people who manufactured cotton armor for sale to other pueblos (Relación de Misantla).

Papantla warriors fought naked, using bows and arrows (Relación de Papantla); and it would appear that the bow and arrow with stone point were used as late as the early nineteenth century, during the Olarte uprising (Olivo, p. 200; Nuñez y Domínguez, p. 54).

Today, the Tajín Totonac have no weapons of their own manufacture, hence a description of arms is included under technology solely as a matter of convenience. The machete probably is the most widely used weapon, as well as an implement of general utility. As a matter of fact, it is carried so constantly by every man that it might almost be considered a standard accessory to the wardrobe.

The machete is an oversized steel knife, affixed with metal rivets to a handle which, nowadays, apparently is of some synthetic material. There are various shapes, but the curved or hooked form, popular in stony areas, is not used locally. All machetes are purchased in hardware stores in Papantla. Without exception, they appear to have been made in the United States, most by Collins & Company, of Hartford. Two informants are unaware that they are using imported merchandise and gravely assure us that machetes sold in Papantla are produced in Monterrey, Mexico.

Different models are distinguished by trade numbers, of which Collins 35 and 460 seem to be the most popular. Most favor the latter, but some claim that it is too long for a man of "medium" stature, who uses, in its stead, either a 22 or a 35. One states that his machete is an "eagle," No. 1724; we did not see the implement and assume that the eagle is simply the emblem borne by a standard product, probably not manufactured by Collins. Another, who identifies the make of his machete as a "hammer," actually uses a Collins 22, which has this insignia as part of the trademark, as does the Collins 460.

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[28] Bows, arrows, and lances are reported for the Huasteca (Sahagún 3:131; Díaz del Castillo 1:90).

For neither Totonacapan nor the Huasteca have we found mention of the blowgun, although the latter is attributed, somewhat dubiously, to the Teotihuacán horizon (Linné, 1939, pp. 56–57); to the ancient Toltec (Veytia 1:194); to the Chichimecs (Ixtlilxochitl 1:75), whose sponsor claims the invention for them; to the Mexica (Gayangos, p. 101; Díaz del Castillo 1:382; Sahagún 2:298–299; Torquemada 1:292); and to the Maya (Ponce 2:409).

"There is no Totonac name for the machete," although some call it mašita (cf. p. 230). Informants distinguish four types by Spanish terms:

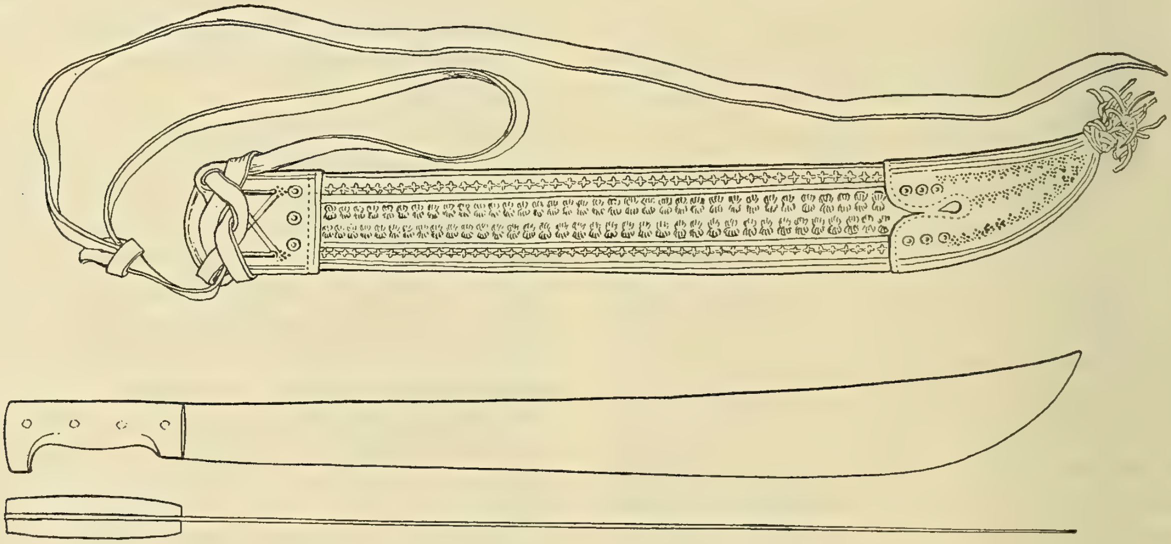

FIGURE 68.—Machete and sheath. Both purchased in Papantla store. Scale: Approximately ⅙ natural size.

a. Huaparra. The blade is broad, but thin. This type is preferred by some because it is "handsome" and "sounds pretty" as it cuts. For clearing along trails and for cleaning light growth from a field, preparatory to felling the trees, it is useful; but for cutting close to the ground, it is not satisfactory. This machete must not be used on bamboo, for the blade will nick; nor should hard or thick wood be cut with it, since the steel will bend. Accordingly, the *huaparra* is a luxury (*lujo*) for the average Totonac man.

b. Huapote. Because of its form, this machete bears the name of the fish, *huapote.* It is similar to the preceding, but shorter, about the same length as the *media cinta* mentioned below. The *huapote* is considered particularly handy for cutting sugarcane.

c. Machete de cinta (literally, strip or band, presumably because the blade is long and thin, with its sides roughly parallel) (fig. 68). This implement serves all the uses for which the *huaparra* is not adequate. It is about the same length as the latter (one which we purchased is close to 80 cm. long), but is much narrower and "thicker," that is, of heavier steel.

d. Machete de media cinta (so-called, because it resembles the preceding type, but is shorter). This serves the same purposes as the *machete de cinta* but is approximately 8 cm. shorter.

We have not been able to accord the above classification very well with commercial types, but Collins 460 definitely is the *machete de cinta;* 22 and 35, presumably the *media cinta.* Of the *huaparra* and *huapote*, we are uncertain. These evidently were most popular a good many years ago; although it is said that some still are used currently, we observed none and know the instrument only from description. One informant thinks that both still are obtainable in Papantla, but we located none.

The machete is purchased already tempered, but without cutting edge. The latter is applied by working the blade with a file or with a special stone (called *mollejón*), purchased in Papantla and thought to be brought from Huauchinango. Most prefer the stone, since a file wears the steel rapidly. However, when a man sallies forth to clear a field, he generally carries a file, in case the blade needs retouching in the course of the day. When fields are being prepared for planting, an almost daily chore is that of sharpening the machete before one leaves the house.

In ordinary times, a machete costs about $10.00

pesos, although during the war years, the price soared to $25.00 pesos. The leather sheath (fig. 68) also is purchased in Papantla, together with a thick thong, about 1.5 cm. wide, by which the sheath is attached to the waist. These accessories cost $5.00 and $1.00 pesos respectively. The leather cover is not made in Papantla and we are uncertain of its provenience; it is said to come from Cuernavaca (*sic*), but a saddler in Villa Juárez assured us that he produces machete covers for the Papantla trade.

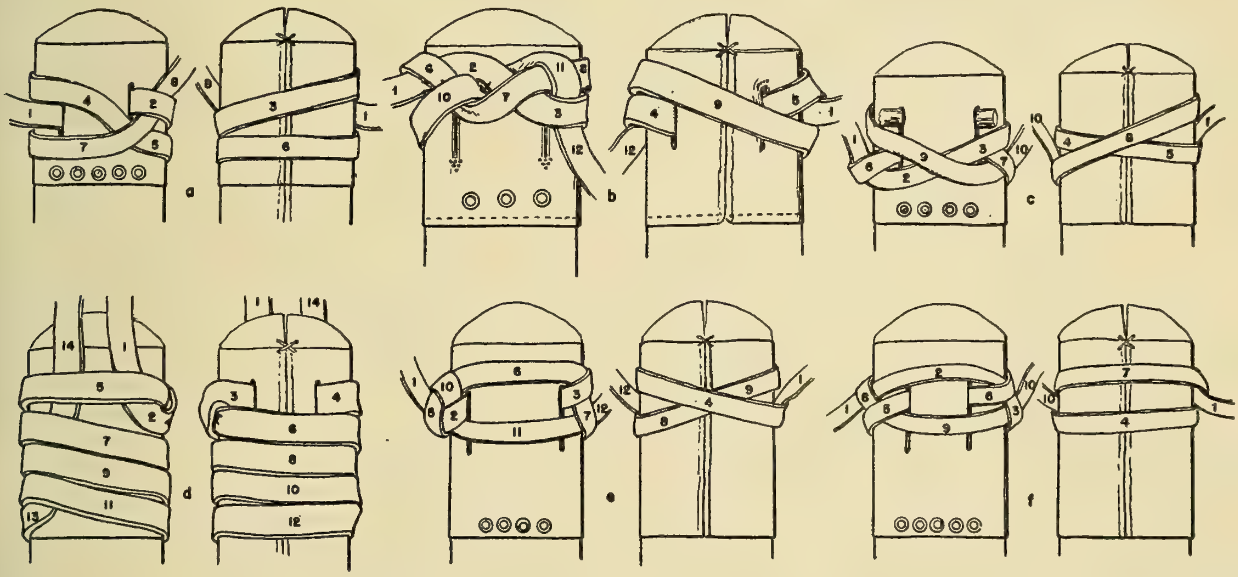

FIGURE 69.—Ways of affixing thong to machete sheath. The thong is numbered consecutively along its length to facilitate following the course of the wrapping. For each specimen, obverse and reverse are shown. With one exception, the former has a pair of parallel slits; the latter, a central seam. However, in *d*, both seam and slits are on the reverse side. In *c*, a twig thrust through the slashes, presumably keeps the thong from riding upward.

A thong passes through slits near the top of the sheath, to which it is affixed in a variety of ways (fig. 69). Some put a commercial metal buckle on one end of the leather strip and fasten it thus about the waist; others simply tie the thongs. Usually the machete hangs at the left side of the waist, ready to be grasped with the right hand. We know several left-handed men in Tajín; they carry the knife on the opposite side.

When a boy begins to assist his father in the fields, he learns to wield a short machete. Accordingly, training starts early, and all local men are highly proficient in handling the knife; some, at least, are close to ambidextrous. About the house, the machete has the combined functions of a knife and hatchet, and a woman sometimes uses it; women who assist in the fields often handle the machete with considerable skill.

In clearing a field and in building a house, the machete is the principal tool used, except when large trees must be felled. Moreover, it functions with appalling efficiency as a weapon, and a fair proportion of the local homicides results from machete wounds.[29] However, more and more, firearms are used in such cases, for one can shoot from a certain distance and thus escape more readily.

Under no circumstances, may a woman step over the machete. Obviously, it continues to cut; but “it may bounce from the hand” and wound the operator.

Firearms are now in general use. Since weapons are not included in our census, we have no way of knowing how plentiful they are, but among our acquaintances, a good many seem to be supplied. Chief reliance is on an ancient type of muzzle-loading fowling piece, double-barreled, and with two triggers. Powder is added first and is tapped lightly with a rod. Next comes a homemade "cork" (*tapón*), consisting of a ball of raveled rope (*mecate*), which is pounded tightly into place. Next, shot is added, followed by another "cork."

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[29] In local thought, the machete is firmly identified as a homicidal weapon. One informant was recounting folktales and included, for good measure, his version of certain Biblical events. He described the death of Christ as follows: *"Luego mataron a Nuestro Señor; lo hicieron cachitos y lo sepultaron."*

It is said that the arm will take two sizes of shot, dependent upon the quarry. The latter includes both man and beast, and we know of at least two instances in which the fowling piece was used for homicide. Powder, shot, and the cap (*casquillo*) against which the trigger hits, are stored in the hollowed, dried fruit of the *zacual cimarrón* (No. 132).

There are several rifles (cartridge and arm are both called *cartucho*) in the community, and at least two men, probably more, have pistols. Care is taken that no woman, irrespective of her social or physiological condition, step over a firearm. Should such a calamity occur, the aim of the weapon is ruined irrevocably.

APPENDIX A

LANGUAGE AND POPULATION

SIXTEENTH CENTURY

The sixteenth century extent of Totonacapan and its population have been considered in the main text (pp. 3–12). In table 14 (pp. 251–260) are presented the basic data on which that treatment is based.

In formulating table 14, we have used two more or less distinct, but in part overlapping, sets of sources, which are discussed separately in the following paragraphs.

LINGUISTIC SOURCES

We have relied chiefly on five linguistic sources, three of which are ecclesiastical:

1. Two documents, *Doctrinas de indios*, written about 1569 and 1571, respectively. Both are cited as Doctrinas, and page reference indicates clearly which document is involved; both have been published by Paso y Troncoso.

2. *Relación del distrito y pueblos del obispado de Tlaxcala;* written about 1570; published in the Epistolario and so cited.

3. Mota y Escobar, *Memoriales del obispo de Tlaxcala*, covering the years between 1608 and 1624; cited by author. Observations subsequent to 1623 contain no reference to native speech in the area which interests us.

4. Various of the *relaciones geográficas*, those utilized dating between 1579 and 1581. Unpublished *relaciones* are cited by title; published ones, under the name of the editor, Paso y Troncoso, except for that of Huauchinango, published by Toussaint, and cited by his name.

5. Various documents in the Archivo General de la Nación; cited as AGN, followed by a number which refers to our terminal bibliography. Unfortunately, the greater part of the data found in the Archivo applies to the seventeenth and eighteenth centuries. Accordingly, the information does not appear in the present table or in map 1, but is cited occasionally in the text.

Additional minor sources include Gómara, Díaz del Castillo, Mendieta, Ixtlilxochitl, Ponce, and Torquemada, all cited by author.

Differences and contradictions between the various sources are discussed in detail in the notes below. We have considered most reliable the sources listed above under numbers 1, 3, and 4. When they are not in agreement, we have attempted to choose between them, with the reasons for the selection indicated in the notes.

As special cases, under Nautla (No. 27), Cuautenco (No. 44), and Totutla (No. 65) are three references which indicate language prior to 1519. Various records subsequent to 1623 are cited in the text but have not been included either in table 14 or in map 1.

POPULATION SOURCES

The population sources are chiefly nine, as follows:

1. *Suma de visitas*, which apparently dates from ca. 1550; published by Paso y Troncoso; cited as: Suma.

2. *Relación de los pueblos de indios de Nueva España que están encomendados en personas particulares;* written in 1560; published in the Epistolario, and so cited.

3. *Lista de los pueblos de indios . . . encomendados en personas particulares;* written between 1565 and 1570; published by García Pimentel, 1904, and cited by editor's name.

4. *Relación del distrito y pueblos del obispado de Tlaxcala;* written about 1570; published in the Epistolario and so cited.

5. Two documents, *Doctrinas de indios*, written about 1569 and 1571, respectively. Both cited as Doctrinas, with page reference indicating which document is involved; published by Paso y Troncoso.

6. López de Velasco, *Geografía y descripción universal de las Indias;* written in 1571; cited by name of author.

7. Various of the *relaciones geográficas*. Unpublished ones are cited by title; published *relaciones*, under the name of the editor, Paso y Troncoso.

8. *Información recibida en la Real Audiencia de México;* dated 1597; published in the Epistolario and so cited.

9. Mota y Escobar, *Memoriales del Obispo de Tlaxcala*, covering the years 1608 to 1624; cited by author. Observations subsequent to 1610 do not contain population data for the zone under consideration.

Additional minor sources include: Las Casas and Aguilar, both cited by author; and the *Sen-*

tencias que dieron el visitador Diego Ramírez y su acompañado, the latter published in the Epistolario and so cited.

The validity of available sources on ancient population has been much discussed of late. Kubler (p. 612) believes that the figures may have been exaggerated by the *encomenderos*, in complicity with Crown officials, in order to boost tribute. Native informants, on the other hand, probably gave low figures in the hope of reducing taxes.

In fact, one source (Martín Cortés, pl. 448) claims that the native chiefs had great numbers of the population go into hiding. Thereupon, they requested a new tax levy, claiming that, owing to reduction in numbers, they could not meet current obligations. He maintains that an inspector might find only a third of the population, even though no deaths had occurred. However, it seems by no means unlikely that the *encomenderos* themselves reduced the number, in order to simulate poverty and thus obtain new grants from the Crown. Cook and Simpson (p. 1) maintain that a careful examination of the sixteenth century documents is highly convincing and that their essential agreement cannot be fortuitous.

We believe, however, that Kubler's comments (p. 613) concerning the difficulty of an accurate census in the sixteenth century are well taken—not only because of technical difficulties, but also because of the displacement of native population. We know, in fact, that a large number of natives changed residence frequently, in order to take advantage of the consequent exemption of tribute (Doctrinas, p. 220). Elsewhere (pp. 34–38) will be found a discussion of the Totonac dispersal which resulted from the systems of *encomiendas* and *haciendas*.

Obviously, on the one hand, not all of the sixteenth-century native population could have been taken into consideration, and the actual population between 1550 and 1610 must have been appreciably greater than that which is given in the sources, even if it be assumed that the latter cite correct figures for the areas under Spanish control. Probably the major difficulty lies not in the estimates which appear in the various sources—among which there is suggestive agreement—but in the fact that the old documents do not begin to cover the entire territory.

On the other hand, there is a certain danger of duplication. Sometimes it is difficult to accommodate Totonac pueblos to Spanish political and ecclesiastical boundaries. Accordingly, it is by no means impossible that a settlement, not mentioned by name, but included as the subject of a more important pueblo, may be counted by us a second time if, in another source, it appears under its own name. We feel, however, that errors resulting from such duplication probably are slight.

For 16 pueblos, we have cited estimates of population prior to 1550. These come principally from the *relaciones geográficas*, but statements from Las Casas and Aguilar also are included. On the whole, the estimates appear reasonable, and only for "Cempoala," Colipa, Jalapa, and Papantla are they so large that exaggeration may be suspected. A discussion of the 1519 population will be found in the text (pp. 11–12).

MODERN TIMES

Modern Totonacapan may be defined as the area where the Totonac language still is current. In order to establish its boundaries, we have inspected the original sheets of the 1940 census; the published reports are not enlightening, since they class bilinguals as Spanish-speaking.

We started with municipal units known to contain a Totonac ingredient, and from them we worked outward radially, until it was evident that we were well beyond the range of Totonac speech. Table 15 is the result of our endeavors. Population totals given therein are from the published 1940 census; occurrences of native speech are from our count of the records in the census archives. The grouping of all persons exclusively of non-indigenous speech and of all children less than 5 years of age is explained in the legend to may 2. The latter is essentially a graphic presentation of the data of table 15. On the map, occurrences of less than 3 percent of native speech have been ignored; however, the table gives the incidence of these insignificant elements.

In map 3, the extent of sixteenth-century and modern Totonacapan is compared, and the shrinkage which has taken place in the course of the years is treated in the main text (pp. 12–14).

TABLE 14.—*Language and population in sixteenth-century Totonacapan* [1]

A	B	C	D	E	F	G	H	I	J
Key No., map 1	Pueblo	Ownership	Tributaries	Population	Date	Calculated population		Language	Sources
						In 1565, after Cook and Simpson	Our average, ca. 1550–1610		
	VERACRUZ								
1	Acatlán		500	[21] [2, 000]	Ca. 1519				Paso y Troncoso 5 : 113.
				[23] [308]	Ca. 1550				CS(A), p. 118.
		Martín de Mafra			Ca. 1565				CS, p. 166.[67]
		do	100	400	Ca. 1569–71			[60] T-M	Doctrinas, p. 242.
		do	100	400	Ca. 1570			T	Epistolario 14 : 81.
			100	400	1571				López de Velasco, p. 220.
					1572			T	AGN, No. 1.
		Martín de Mafia [sic]	100	400	1580				Paso y Troncoso 5 : 113.
		Martín de Mafra	85	340	1597				Epistolario 13:35.
						400*	388		*CS, pp. 118–119.
2	Actopan			[22] [253]	Ca. 1550				CS(A), p. 118.
		Crown	85	340	Ca. 1569–71			[60] T-M	Doctrinas, p. 241.
		do	110	440	Ca. 1570			T	Epistolario 14 : 81.
			52	208	Ca. 1570				CS(E), p. 118.
			85	340	1571				López de Velasco, p. 219.
						329*	332		*CS, pp. 118–119.
3	Almolonga		1, 500	[21] [6, 000]	Ca. 1519				Paso y Troncoso 5 : 118.
				[22] [63]	Ca. 1550				CS(A), p. 118.
		Crown			Ca. 1565				CS, p. 168.[67]
		[Gonzalo Rodríguez de]Villafuerte	21	84	Ca. 1569–71			[60] T-M	Doctrinas, p. 242.
		Gonzalo Rodríguez de Villafuerte	20	80	Ca. 1570			T	Epistolario 14 : 82.
			21	84	1571				López de Velasco, p. 220.
		Crown	20	80	1580			[60] T-M	Paso y Troncoso 5 : 118–119.
						82*	82		*CS, pp. 118–119.
4	Atzalan [1a]	Andrés Dorantes [15]	1, 300	5, 200	Ca. 1550				Suma, No. 351.
		María de la Torre	3, 900	[23] [15, 600]	1560				Epistolario, 9 : 18.
		Andrés Dorantes			Ca. 1565				CS, p. 188.[67]
		María de la Torre	1, 300	5, 200	1565–1570				García Pimentel, 1904, p. 169.
			1, 700	6, 800	Ca. 1569–71			[60] T-M	Doctrinas, p. 264.
		Andrés Dorantes	1, 608	6, 432	Ca. 1570			[60] T-M	Epistolario 14 : 80.
			1, 700	6, 800	1571				López de Velasco, pp. 221–222.
		Antonia de Benavides	963	3, 852	1597				Epistolario 13:35.
						5, 200*	5, 714		*CS, pp. 68–69.
	Atzalan with Jalacingo and Altotonga.[2]	Crown	800	[24] [3, 200]	1609			[61] T	Mota y Escobar, p. 198.
							[44] [3,200]		
5	"Cempoala"				1519			T	Díaz del Castillo 1 : 160, 171.
					1519			T	Torquemada 1 : 278.
			20, 000–30, 000	[21] [80, 000–120, 000]	Ca. 1519				Las Casas, p. 129.
			20, 000	[21] [80, 000]	Ca. 1519				Aguilar, p. 39.
			30, 000	[21] [120, 000]	Ca. 1519				Paso y Troncoso 5 : 201.
			20, 000	[21] [80, 000]	Ca. 1519				Relación de Veracruz.
			20	80	1529				Epistolario 1:141.
				[22] [36]	Ca. 1550				CS (A), p. 134.
		Crown			Ca. 1565				CS, p. 217.[67]
		do	12	48	Ca. 1570				Epistolario 14 : 82.
		do	20	80	1571				Paso y Troncoso 5 : 193.
			30	120	1580				Relación de Veracruz.
		Crown	8	32	1609			T	Mota y Escobar, p. 218.
						48*	72		*CS, pp. 134–135.
6	Chapultepec		2, 000	[21] [8, 000]	Ca. 1519				Paso y Troncoso 5 : 111.
				[22] [404]	Ca. 1550				CS (A), p. 120.
		Crown			Ca. 1565				CS, p. 178.[67]
		do	140	560	Ca. 1569–71			[60] T-M	Doctrinas, p. 240.
		do	140	560	Ca. 1570			T	Epistolario 14 : 81.
			114	456	Ca. 1570				CS (E), p. 120.
			140	560	1571				López de Velasco, p. 219.
					1572			[60] T-M	AGN, No. 1.
		Crown	150	600	1580			[60] T-M	Paso y Troncoso 5 : 111–112.
						525*	547		*CS, pp. 120–121.

See footnotes at end of table.

TABLE 14.—*Language and population in sixteenth-century Totonacapan*—Continued

A	B	C	D	E	F	G	H	I	J
						Calculated population			
Key No., map 1	Pueblo	Ownership	Tributaries	Population	Date	In 1565, after Cook and Simpson	Our average, ca. 1550–1610	Language	Sources
	VERACRUZ—Continued								
7	Chichilintla	Diego de Porras [16]	696	2,784	Ca. 1550				Suma, No. 116.
		Juan de Cuenca	1,800	7,200	1560				Epistolario 9 : 6.
		do			Ca. 1565				CS, p. 178.[67]
		do	1,500	6,000	1565–70				García Pimentel, 1904, p. 156.
		do	1,000	4,000	Ca. 1570			[62] T-M	Epistolario 14 : 77.
					1581			T	Relación de Jojupango.
			1,200	4,800	1579–84				CS (O), pp. 120–121.
		María de Porras	925	[25] [3,700]	1597				Epistolario 13 : 35.
						5,000*	4,957		*CS, pp. 120–121.
8	Chiconquiaco [2a]	Juan Valiente	35	[26] [140]	1565–70				García Pimentel, 1904, p. 171.
		do	50	200	1580			[60] T-M	Paso y Troncoso 5 : 114–115.
							200		
	Chiconquiaco with Miahuatlán [2a]	do	150	[27] [600]	Ca. 1569–71			[60] T-M	Doctrinas, p. 242.
		do	150	[27] [600]	Ca. 1570			T	Epistolario 14 : 81–82.
							[45] [600]		
9	Chicuasén [3]			[22] [142]	Ca. 1550				CS (A), p. 132.
			45	180	1560				CS (B), p. 132.
		Crown			Ca. 1565				CS, p. 178.[67]
			45	180	1565–70				CS (L), p. 132.
		Crown	45	180	Ca. 1569–71			[60] T-M	Doctrinas, p. 241.
			50	200	Ca. 1570			T	Epistolario 14 : 81.
			45	180	Ca. 1570				CS (E), p. 132.
			45	180	1571				CS (C), p. 132.
			45	180	1571				López de Velasco, p. 219.
						185*	183		*CS, pp. 132–133.
10	Chiltoyac [4]	Crown	40	[28] [160]	1580			[60] T-M	Paso y Troncoso 5 : 119.
							[46] [160]		
	Chiltoyac with "Pangololutla" and "Maçaltajola." [4a]	Gonzalo Rodríguez de Villafuerte	170	680	1560				Epistolario 9 : 22.
		do			Ca. 1565				CS, p. 179.[67]
		do			1565–70				García Pimentel, 1904, p. 170.
							680		
11	Chumatlán [2a]	Ana María	150	600	1610			T	Mota y Escobar, pp. 231–232.
							600		
12	"Ciguacoatlan" [5]		1,000	[21] [4,000]	Ca. 1519				Paso y Troncoso 5:116.
				[22] [154]	Ca. 1550				CS (A), p. 134.
		Crown			Ca. 1565				CS, p. 217.[67]
			50	200	Ca. 1569–71			T	Doctrinas, pp. 204–205.
			50	200	1571				López de Velasco, p. 216.
		Crown	25	100	1580			[60] T-M	Paso y Troncoso 5:116–117.
						*200	167		*CS, pp. 134–135.
13	Coacoatzintla		800	[21] [3,200]	Ca. 1519				Paso y Troncoso 5:110.
				[22] [444]	Ca. 1550				CS (A), p. 120.
		Son of Lucas Gallego	100	400	1560				Epistolario 9 : 15.
		Domingo Gallego [17]			Ca. 1565				CS, p. 173.[67]
		Son of Lucas Gallego	60	240	1565–70				García Pimentel, 1904, pp. 165–166.
		Miguel Arias	163	652	Ca. 1569–71			[60] T-M	Doctrinas, p. 242.
		do	200	800	Ca. 1570			T	Epistolario 14:81.
			173	692	1571				López de Velasco, p. 219.
		Domingo Gallego	120	480	1580				Paso y Troncoso 5:109–110.
		Domingo Gallegos [sic]	67	268	Ca. 1597				Epistolario 13:40.
						*577	505		*CS, pp. 120–121.
14	Coahuitlán [2a]	Ana María	80	320	1610			T	Mota y Escobar, pp. 230–231.
							320		
15	Colipa [6]		6,000	[21] [24,000]	Ca. 1519				Paso y Troncoso 5:115.
		Crown			Ca. 1565				CS, p. 174.[67]
			120	480	Ca. 1569–71			T	Doctrinas, pp. 204–205.
			130	520	1571				López de Velasco, p. 216.
		Crown	100	400	1580			T	Paso y Troncoso 5:115–116.
							467		

16	"Huehuetepec" with "Piloya" [2a]		10	40	Ca. 1569-71			T	Doctrinas, pp. 204-205.
			10	40	1571				López de Velasco, p. 216.
							40		
17	Jalacingo			[22] [3,800]	Ca. 1550				CS (A), p. 120.
			320	1,280	1560				CS (B), p. 120.
		Crown			Ca. 1565				CS, p. 185.[67]
		do.	800	3,200	Ca. 1570			[63] T-M	Epistolario 14:79-80.
			1,403	5,612	Ca. 1570				CS (E), p. 120.
			1,502	6,008	1571				CS (C), p. 120.
		Crown			1609			M	Mota y Escobar, p. 198.
						4,940*	4,025		*CS, pp. 120-121.
	Jalacingo with Altotonga and Tlapacoyan.[2]	Crown	800	[19] [3,200]	Ca. 1569-1571			M	Doctrinas, p. 248.
							[47] [3,200]		
18	Jalapa		30,000	[21] [120,000]	Ca. 1519				Paso y Troncoso 5:100.
				[22] [1,966]	Ca. 1550				CS (A), p. 122.
		Crown			Ca. 1565				CS, p. 185.[67]
			1,295	5,180	1571				López de Velasco, p. 223.
					1572			[64] T-M	AGN, No. 1.
		Crown	639	2,556	1580			M	Paso y Troncoso 5:99-101.
					1585			[64] T-M	Ponce 1:187.
						*2,556	3,868		*CS, pp. 122-123.
19	Jilotepec [6a]		1,000	[21] [4,000]	Ca. 1519				Paso y Troncoso 5 : 106.
				[22] [1,148]	Ca. 1550				CS (A), p. 120.
		Crown	360	1,440	Ca. 1569-71			[60] T-M	Doctrinas, p. 240.
		do.	350	1,400	Ca. 1570			T	Epistolario 14: 80-81.
			360	1,440	1571				López de Velasco, p. 219.
					1572			T	AGN, No. 1.
		Crown	200	800	1580			[60] T-M	Paso y Troncoso 5 : 106.
		do.	341	1,364	1609			[T]	Mota y Escobar, p. 201.
						*1,493	1,289		*CS, pp. 120-121.
20	"Maçaltajola" (see Chiltoyac, No. 10).								
21	Maxtlatlán			[22] [108]	Ca. 1550				CS (A), p. 132.
		Crown			Ca. 1565				CS, p. 188.[67]
		do.	35	140	Ca. 1569-71			[60] T-M	Doctrinas, p. 241.
			35	140	1571				López de Velasco, p. 219.
		Crown	15	60	1580				Paso y Troncoso 5 : 119.
						*140	113		*CS, pp. 132-133.
22	Mecatlán [7]		900	3,600	1571				López de Velasco, p. 218.
		Ana María	240	960	1610			T	Mota y Escobar, p. 231.
							2,280		
	Mecatlán with Chichilintla [2]	Juan de Cuenca	1,200	[30] [4,800]	Ca. 1569-71			[60] T-M	Doctrinas, p. 232.
							[48] [4,800]		
23	Miahuatlán (see Chiconquiaco, No. 8).		2,000	[21] [8,000]	Ca. 1519				Paso y Troncoso 5 : 114.
				[22] [461]	Ca. 1550				CS (A), p. 122.
		Juan	50	200	Ca. 1560				Epistolario 9:32.
		Juan Valiente			Ca. 1565				CS, p. 189.[67]
		do.			Ca. 1570			T	Epistolario 14: 81-82.
			150	600	1571				López de Velasco, p. 220.
		Juan Valiente	50	200	1580			[60] T-M	Paso y Troncoso 5: 114.
						*600	333		*CS, pp. 122-123.
24	Misantla			[22] [2,476]	Ca. 1550				CS (A), p. 122.
		Crown	300	1,200	1553				Epistolario 8 : 156.
		do.			Ca. 1565				CS, p. 189.[67]
		do.	800	3,200	Ca. 1565				Relación de Misantla.
			500	2,000	Ca. 1569-71			T	Doctrinas, pp. 204-205.
		Crown	600	2,400	Ca. 1570			[60] T-M	Epistolario 14 : 80.
			610	2,440	Ca. 1570				CS (E), p. 122.
			500	2,000	1571				López de Velasco, p. 216.
					1572			M	AGN, No. 1.
		Crown	378	1,512	1579			T	Relación de Misantla.
			585	2,340	1579-84				CS (O), pp. 122-123.
		Crown	455	1,820	1610			T	Mota y Escobar, p. 219.
						*3,220	2,101		*CS, pp. 122-123.
25	"Nanacatlan" [2a]		25	100	Ca. 1569-71			T	Doctrinas, pp. 204-205.
			25	100	1571				López de Velasco, p. 216.
							100		
26	Naolinco [2]		1,500	[21] [6,000]	Ca. 1519				Paso y Troncoso 5:112.
		Crown			Ca. 1565				CS, p. 190.[67]
		do.	200	800	Ca. 1569-71			[60] T-M	Doctrinas, pp. 240-241.
		do.	230	920	Ca. 1570			T	Epistolario 14:81.
			200	800	1571				López de Velasco, p. 219.
		Crown	150	600	1580			[60] T-M	Paso y Troncoso 5:112-113.
		do.	347	1,388	1609			[60] T-M	Mota y Escobar, pp. 201-202.
							902		
	Naolinco with "Almería," Colipa, "Malinalcingo," Tlapacoyan, and Tamomolo.					860*			CS, pp. 122-123.

See footnotes at end of table.

TABLE 14.—*Language and population in sixteenth-century Totonacapan*—Continued

A	B	C	D	E	F	G	H	I	J
						Calculated population			
Key No., map 1	Pueblo	Ownership	Tributaries	Population	Date	In 1565, after Cook and Simpson	Our average, ca. 1550–1610	Language	Sources
	VERACRUZ—Continued								
27	Nautla [8]				1486			T	Ixtlilxochitl 2: 271.
28	"Pangololutla" (see Chiltoyac, No. 10).								
29	Papantla [3]		15,000	[21] [60,000]	Ca. 1519				Relación de Papantla.
		Andrés de Tapia	421	1,684	Ca. 1550				Suma, No. 449.
		do			Ca. 1565				CS, p. 193.[67]
		Cristóbal de Tapia	300	1,200	1581			T	Relación de Papantla.
		"*Encomendero*"	300	1,200	1610			[60] T-M	Mota y Escobar, pp. 232–233.
							1,361		
	Papantla with "Tuzapan"	Andrés de Tapia	1,720	[31] [6,880]	1560				Epistolario 9:22.
		Cristóbal de Tapia	150	[31] [600]	Ca. 1570			M	Epistolario 14:77.
						1,200*	[49] [3,740]		*CS, pp. 122–123.
	Papantla with "Tuzapan" and Tuxpan.[2]	Cristóbal de Tapia	600	[32] [2,400]	1565–70				García Pimentel, 1904, pp. 172–173.
							[50] [2,400]		
	Papantla with Tancoco, Tihuatlán, "Tuzapan," and Jalpan.[2]	Cristóbal de Tapia	550	[33] [2,200]	Ca. 1569–71			[65] T-M-H-O-Tep.	Doctrinas, p. 220.
							[51] [2,200]		
30	"Piloya" (see "Huehuetepec," No. 16).								
31	Potingo [2a]		10	40	Ca 1569–71			T	Doctrinas, pp. 204–205.
			10	40	1571				López de Velasco, p. 216.
							40		
32	"Quiahuixtlan" [2a]				Ca. 1519			T	Gómara 1:127.
					Ca. 1519			T	Torquemada 1:278.
33	Tepetlán		1,000	[21] [4,000]	Ca. 1519				Paso y Troncoso 5: 117.
				[22] [328]	Ca. 1550				CS(A), p. 122.
		Crown	103	412	Ca. 1569–71			[60] T-M	Doctrinas, p. 241.
		do	110	440	Ca. 1570			T	Epistolario 14: 81.
			103	412	1571				López de Velasco, p. 219.
		Crown	60	240	1580			T	Paso y Troncoso 5: 117–118.
						426*	376		*CS, pp. 122–123.
34	Tlacolulan		2,000	[21] [8,000]	Ca. 1519				Paso y Troncoso 5: 108.
				[22] [2,153]	Ca. 1550				CS (A), p. 124.
			100	400	1560				CS (B), p. 124.
		Crown			Ca. 1565				CS, p. 208.[67]
		do	700	2,800	Ca. 1569–71			[60] T-M	Doctrinas, pp. 239–240.
		do	700	2,800	Ca. 1570			[60] T-M	Epistolario 14: 80.
			700	2,800	1571				López de Velasco, p. 219.
		Crown	450	1,800	1580			[60] T-M	Paso y Troncoso 5: 107–108.
		do	312	1,248	1609			[60] T-M	Mota y Escobar, p. 200.
						2,800*	1,975		*CS, pp. 124–125.
35	"Tlapostectlan" [3a]		40	160	Ca. 1569–71			T	Doctrinas, pp. 204–205.
			40	160	1571				López de Velasco, p. 216.
							160		
36	Tonayán			[22] [431]	Ca. 1550				CS (A), p. 132.
			140	560	Ca. 1569–71			T	Doctrinas, pp. 204–205.
			140	560	1571				López de Velasco, p. 216.
						560*	560		*CS, pp. 132–133.
37	"Yohualtlacualoyan" [3a]	Crown	400	1,600	1610			T	Mota y Escobar, p. 222.
							1,600		
38	Zozocolco [3a]	Crown	240	960	Ca. 1569–71			[60] T-M	Doctrinas, pp. 210–213.
		do	300	1,200	Ca. 1570			[60] T-M	Epistolario 14: 76.
					1581			T	Relación de Jojupango.
		Crown			1610			T	Mota y Escobar, p. 232.
							1,080		
	Subtotal					31,341	37,417		

	PUEBLA								
39	Ameluca			[22] [62]	Ca. 1550				CS (A), p. 64.
		Crown	20	80	Ca. 1570			T	Epistolario 14: 74.
						80*	80		*CS, pp. 64-65.
	Ameluca with Pantepec and Huitzila.[2]	Crown	200	[34] [800]	Ca. 1569-71			[65] T-M-O-Tep.	Doctrinas, p. 219.
							[52] [800]		
40	Ayotochco (see Jonotla, No. 54)	[Crown]			1581			[60] [T-M]	Paso y Troncoso 5: 136.
41	"Caxitlantongo"[2]	Cristóbal de Tapia	40	160	Ca. 1570			[60] [T-M]	Epistolario 14: 74.
							160		
	"Caxitlantongo" with Huitzila			[35] [369]	Ca. 1550				CS (A), p. 66.
						480*	[53] [480]		*CS, pp. 66-67.
42	Chila[2]		2,000	[21] [8,000]	Ca. 1519				Relación de "Matlatlan" y Chila.
		Francisco de Montejo[18]	331	1,324	Ca. 1550				Suma, No. 136.
		Alvaro Maldonado [*sic*][18]			Ca. 1565				CS, p. 179.[67]
		Catalina de Montejo	350	1,400	Ca. 1569-71			[60] T-M	Doctrinas, pp. 218-219.
			700	2,800	1571				López de Velasco, p. 218.
			180	720	1610			T	Mota y Escobar, p. 229.
							1,561		
	Chila with "Matlatlan"[9]	Licenciado Maldonado[18]	2,260	[36] [9,040]	1560				Epistolario 9:7.
		Catalina de Montejo			1565-70				García Pimentel, 1904, p. 157.
		do			Ca. 1570			[60] T-M	Epistolario 14:78.
		do	400	[36] [1,600]	1581			T	Relación de "Matlatlan" y Chila.
						6,400*	[54] [5,320]		*CS, pp. 66-67.
43	"Cuauhtlapehualco"[2a]	Crown			1610			T-M-O	Mota y Escobar, p. 243.
44	Cuautenco[2a], [8a]				Pre-Conquest			T	Paso y Troncoso 5:152.
45	"Esamayeco" (see Hueytlapan, No. 48).								
46	Ecatlán (see Jonotla, No. 54)	[Crown]			1581			[60] T-M	Paso y Troncoso 5:139-140.
47	Huauchinango[2]	Alonso de Villanueva[19]	1,143	4,572	Ca. 1550				Suma, No. 269.
		Agustín de Villanueva			Ca. 1565				CS, p. 181.[67]
			3,700	14,800	1571				López de Velasco, p. 196.
		Catalina de Peralta	2,242	8,968	1597				Epistolario 13:37.
		do	2,500	10,000	1609			T-M-O	Toussaint, pp. 294-295.
							9,585		
	Huauchinango with Ocelotepec	Agustín de Villanueva[19]	3,900	[36a] [15,600]	1560				Epistolario 9:15.
		do	2,900	[36a] [11,600]	1565-70				García Pimentel, 1904, p. 165.
						13,284*	[54a] [13,600]		*CS, pp. 66-67.
48	Hueytlalpan[2]	Crown			Ca. 1565				CS, p. 182.[67]
		do	1,730	[37] [6,920]	Ca. 1569-71			[60] T-M	Doctrinas, p. 213.
		do	1,710	[37] [6,840]	Ca. 1570			[60] T-M	Epistolario 14:77.
			1,730	[37] [6,920]	1571				López de Velasco, p. 217.
		Crown			1581			T	Relaciones de Hueytlalpan, Papantla, Jojupango.
		do	286	[37] [1,144]	1610			T	Mota y Escobar, pp. 226-227.
							[55] [5,456]		
	Hueytlalpan with "Esamayeco" and Zongozotla.			[22] [5,292]	Ca. 1550				CS (A), p. 66.
			1,000	4,000	1560				CS (B), p. 66.
			1,730	6,920	1579-84				CS (O), pp. 66-67.
						6,880*	5,460		*CS, pp. 66-67.
49	Huitzila[2]	Crown	80	320	Ca. 1570			[60] T-M	Epistolario 14:74.
							320		
	Huitzila with Ameluca and Pantepec (see Ameluca, No. 39).								
	Huitzila with "Caxitlantongo" (see "Caxitlantongo," No. 41)								
50	Huitzilan with Zapotitlán[2a]	Crown	318	1,272	1610			T	Mota y Escobar, p. 227.
							1,272		
51	Ixtepec			[22] [616]	Ca. 1550				CS (A), p. 72.
		Crown	175	700	1552				Epistolario 8:154.
		[Crown]		[38] [650]	Ca. 1569-71			[66] M	Doctrinas, p. 214.
		Crown	200	800	Ca. 1570			[60] M	Epistolario 14:77
					1610			[66] T	Mota y Escobar, p. 226.
						800*	750		*CS, pp. 72-73.
52	Jalpan			[22] [923]	Ca. 1550				CS (A), p. 68.
		Cristóbal de Tapia	300	1,200	Ca. 1570			[T-M-O]	Epistolario 14:74.
		Andrés de Tapia	200	800	1610			[T-M-O?]	Mota y Escobar, p. 242.
						1,200*	1,000		*CS, pp. 68-69.
	Jalpan with Tancoco, Tihuatlán, "Tuzapan," and Papantla (see Papantla, No. 29).								

See footnotes at end of table.

TABLE 14.—*Language and population in sixteenth-century Totonacapan*—Continued

A	B	C	D	E	F	G	H	I	J
Key No., map 1	Pueblo	Ownership	Tributaries	Population	Date	Calculated population: In 1565, after Cook and Simpson	Calculated population: Our average, ca. 1550–1610	Language	Sources
	PUEBLA—Continued								
53	Jojupango	Gonzalo de Salazar and Diego de Padierna.[19a]	534	2,136	Ca. 1550				Suma, No. 798.
		Gonzalo de Salazar and Diego de Villapadierna.	460	1,840	1552				Epistolario 6:165.
		do	2,600	[39] [10,400]	1560				Epistolario 9:19.
		do			Ca. 1565				CS, p. 186.[67]
		do	700	2,800	Ca. 1569–71			[60] [T-M]	Doctrinas, pp. 218–219.
		Gonzalo de Salazar and Villapadierna.	800	3,200	Ca. 1570			[60] T-M	Epistolario 14:78.
			700	2,800	1571				López de Velasco, p. 218.
			400	1,600	1579–84				CS (O), pp. 68–69.
		Gonzalo de Salazar and Diego de Villapadierna.			1581			T	Relación de Jojupango.
		Diego de Villapadierna and Fernando de Salazar.	727	2,908	1597				Epistolario 13:43.
		Crown	510	2,040	1610			T	Mota y Escobar, p. 229.
						3,200*	2,416		*CS, pp. 68–69.
	Jojupango with "Tonatico"[2]	Diego de Padierna and Gonzalo de Salazar.	800	[40] [3,200]	1565–70				García Pimentel, 1904, p. 169.
							[56] [3,200]		
54	Jonotla (includes Ayotochco, Ecatlán and Tuzamapan).[8b]	Crown	273	1,092	Ca. 1550				Suma, No. 294.
		do	400	1,600	1552				Epistolario 8:154.
			450	1,800	1560				CS (B), p. 68.
		Crown			Ca. 1565				CS, p. 186.[67]
		do	925	3,700	Ca. 1569–71			[60] T-M	Doctrinas, pp. 210–212.
		do	800	3,200	Ca. 1570			[60] T-M	Epistolario 14:76.
			758	3,032	1579–84				CS (O), pp. 68–69.
		Crown	200	800	1581			[60] T-M	Paso y Troncoso 5:124–127.
		do	140	560	1610			T	Mota y Escobar, p. 225.
						3,200*	1,973		*CS, pp. 68–69.
55	Jopala[2a]				1623			[T]	Mota y Escobar, p. 301.
56	"Matlatlan"[9]		2,000	[21] [8,000]	Ca. 1519				Relación de "Matlatlan" y Chila.
		Catalina de Montejo	350	1,400	Ca. 1569–71			[60] [T-M]	Doctrinas, pp. 218–219.
		do			1581			T	Relación de "Matlatlan" y Chila.
					1610			T	Mota y Escobar, p. 229.
							1,400		
57	Olintla[2a]	Crown			1610			T	Mota y Escobar, p. 228.
58	Pahuatlán[2]	Luis de la Torre[20]			1539				Epistolario 8: 14.
		do	701	2,804	Ca. 1550				Suma, No. 474.
		Luisa de Acuña	2,485	9,940	1555				Epistolario 8: 14–15.
		Luis de la Torre			Ca. 1565				CS, p. 193.[67]
			2,000	8,000	1571				López de Velasco, p. 226.
		Luisa de Acuña	2,000	8,000	Ca. 1569–71			T-M-O	Doctrinas, pp. 278–281.
							7,186		
	Pahuatlán with Acaxochitlán	Luisa de Acuña	3,260	[41] [13,040]	1560				Epistolario 9: 2.
		do	3,584	[41] [14,336]	1565–70				García Pimentel, 1904, p. 155.
						*3,600	[57] [13,688]		*CS, pp. 58–59.
59	Pantepec			[22] [285]	Ca. 1550				CS (A), p. 68.
		Crown	30	120	Ca. 1570			[T-M-O]	Epistolario 14: 74.
			155	620	1571				López de Velasco, p. 218.
		Crown	30	120	1610			T-M-O	Mota y Escobar, p. 242.
						*370	287		*CS, pp. 68–69.
	Pantepec with Ameluca and Huitzila (see Ameluca, No. 39).								

60	Pápalo [10]			[22] [1, 534]	Ca. 1550				CS (A), p. 68.
		Juan de la Torre	300	1, 200	1560				Epistolario 9: 22.
		do			Ca. 1565				CS, p. 193.[67]
		do	300	1, 200	Ca. 1570			T–M–O	Epistolario 14: 73.
		do	500	2, 000	Ca. 1569–71			T–M–O	Doctrinas, p. 223.
		Luis de la Torre [20a]	508	2, 032	1597				Epistolario 13:39.
		Crown			1610			T–M–O	Mota y Escobar, p. 243.
							1, 608		
	Pápalo with Tlacuilotepec [11]	Juan de la Torre	300	[42] [1, 200]	1565–70				García Pimentel, 1904, p. 172.
						*2, 000	[58] [1, 200]		*CS, pp. 68–69.
61	San Cristóbal [3a]				1610			T	Mota y Escobar, p. 225.
62	Tenampulco	Diego Valadés	160	640	Ca. 1550				Suma. No. 527.
		Diego de Valadés	150	600	1560				Epistolario 9: 26.
		do			Ca. 1565				CS, p. 203.[67]
		Diego Valadés	150	600	1565–70				García Pimentel, 1904, p. 177.
		Valadés	200	800	Ca. 1570			[60] T–M	Epistolario 14: 76–77.
		Francisco Valadés	200	800	1581			T	Relación de Papantla.
		Alonso Valadés	73	292	1597				Epistolario 13:42.
						*700	622		*CS, pp. 70–71.
63	Tlacuilotepec [11]			[22][2, 960]	Ca. 1550				CS (A), p. 70.
		Juan de la Torre	390	1, 560	1560				Epistolario 9: 22.
		do			Ca. 1565				CS, p. 208.[67]
			962	3, 848	1569–71				CS (H), p. 70.
		Juan de la Torre	950	3, 800	Ca. 1569–71			T–M–O	Doctrinas, pp. 282–283.
		do	655	2, 620	1597				Epistolario 13: 41.
		"*Encomendero*"			1610				Mota y Escobar, p. 244.
						*3, 848	2, 957		*CS, pp. 70–71.
64	"Tonatico" [12]	Crown	236	944	Ca. 1550				Suma, No. 529.
		Diego de Villapadierna and Gonzalo de Salazar. [19a]	600	[43][2, 400]	1560				Epistolario 9: 19.
		Padierna and Gonzalo de Salazar	100	400	Ca. 1570			[60] T–M	Epistolario 14: 76–77.
		Diego de Villapadierna and Gonzalo de Salazar			1581			T	Relaciones de Papantla, Jojupango.
		"*Encomendero*"			1610			T	Mota y Escobar, p. 232.
						*400	672		*CS, pp. 68–69.
65	Totutla [2a, 8a]				Pre-conquest			T	Paso y Troncoso 5: 168.
66	Tuzamapan (see Jonotla, No. 54)	[Crown]			1581			[60] T–M	Paso y Troncoso 5: 132.
67	"Tuzapan" [2, 12a]							T	Mendieta 4: 95–96.
		Andrés de Tapia	1, 023	4, 092	Ca. 1550				Suma, No. 526.
		Cristóbal de Tapia	880	3, 520	1597				Epistolario 13:42.
							3, 806		
68	Villa Juárez [13] (formerly "Jicotepec").	Crown	476	1, 904	Ca. 1550				Suma, No. 803.
			1, 100	4, 400	1560				CS (B), p. 68.
		Crown			Ca. 1565				CS, p. 185.[67]
		do	1, 500	6, 000	Ca. 1569–71			T–M–O	Doctrinas, pp. 222–223.
		do	1, 000	4, 000	Ca. 1570			T–M–O	Epistolario 14: 73–74.
			1, 500	6, 000	1571				López de Velasco, p. 218.
		"*Encomendero*"			1610			[60] T–M	Mota y Escobar, p. 243.
						*5, 000	4, 461		*CS, pp. 68–69.
69	Zacatlán			[22][9, 246]	Ca. 1550				CS (A), p. 72.
			8, 000	32, 000	Before 1555				Epistolario 8: 4.
		Antonio de Carvajal	2, 081	8, 324	1555				Epistolario 8: 4.
		do	1, 840	7, 360	1560				Epistolario 9: 14.
		do			Ca. 1565				CS, p. 216.[67]
		do	3, 150	12, 600	1565–70				García Pimentel, 1904, p. 159.
			2, 860	11, 440	1571				López de Velasco, p. 223.
					1581			T	Relación de Jojupango.
		Antonio de Carvajal	1,500	6,000	1581			[60] T–M	Relación de Zacatlán.
					1586			[60] T–M	Ponce 1: 209.
		Antonio de Carvajal	2, 108	8, 432	1597				Epistolario 13:36.
						*12, 020	12, 308		*CS, pp. 72–73.
70	Zapotitlán (see Huitzilan, No. 50).								
71	Zongozotla [2]	[Crown]		[3, 220]	Ca. 1569–71			[60] T–M	Doctrinas, pp. 214–216.
							[59] [3, 220]		
	Subtotal					63, 462	59, 884		

See footnotes at end of table.

TABLE 14.—*Language and population in sixteenth-century Totonacapan*—Continued

A	B	C	D	E	F	G	H	I	J
						Calculated population			
Key No. Map 1	Pueblo	Ownership	Tributaries	Population	Date	In 1565, after Cook and Simpson	Our average, ca. 1550-1610	Language	Sources
	HIDALGO								
72	Acaxochitlán [14]	Luis de la Torre [20]			1539				Epistolario 8:23.
		Luisa de Acuña	570	2,280	1555				Epistolario 8 : 24.
		do			Ca. 1565				CS, p. 166.
		do	1,700	6,800	Ca. 1569-71			[66a] T-M-O	Doctrinas, pp. 270-272.
		do	900	3,600	Ca. 1570			M-O	Epistolario 14 : 73.
		do	529	2,116	1597				Epistolario 13 : 35.
		Crown			1610				Mota y Escobar, p. 244.
					1623			M	Mota y Escobar, p. 303.
							3,699		
	Subtotal						3,699		
	Total					94,803	101,000		

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[1] Language: 1519 to 1623. Population: *ca.* 1550 to 1610. Headings appear in lettered columns, as follows:

A. Each pueblo is numbered to correspond with entries on map 1; owing to insufficient data, Nos. 20, 28, and 45 do not appear on the map.

B. Pueblos are listed in alphabetical order, by modern state: Nos. 1 to 38, in Verecruz; 39 to 71, in Puebla; 72, in Hidalgo. Spelling follows that of the 1930 Federal census, except in the case of now extinct settlements, whose names appear in quotation marks, with the original orthography preserved.

C. Pueblo ownership is indicated, be it Crown or *encomendero*. When ownership is implied but is not stated explicitly by the source, the entry is within brackets.

D. In this column is given the number of tributaries specified by each source. As a rule, a single figure is given for a pueblo and its various subject settlements. If more than one major pueblo is included, Column B shows which towns have been combined. We have followed Cook and Simpson (pp. 11–13) in combining, under tributaries, the diverse terms used by individual sources—*vecinos, casados, tributarios, pesos de tributo,* and so on.

E. The number of tributaries (from col. D) has been converted into number of inhabitants, at the ratio of four individuals per tributary, as suggested by Cook and Simpson (pp. 17–18). Bracketed entries have not been taken into consideration in calculating the averages given in column H.

F. The date approximate or specific, of each source is indicated; when not given in the original, we have followed the dating suggested by Cook and Simpson (pp. 3–9), except for the Suma, which we date as ca. 1550. The two set of documents which are cited as Doctrinas appear as of 1569–71, although some of the individual documents may be dated 1569 or 1571. In some cases, a source mentions previous conditions; for example, it may give the population of 15 years before, or that at the time of the Spanish Conquest. In such instances, column indicates the date to which the information applies, not that of the document which is being cited.

G. In this column is given the population, pueblo by pueblo, for *ca.* 1565, according to the reckoning of Cook and Simpson. Their calculation is followed by an asterisk, and the same symbol indicates, in column J, the page reference. The work of Cook and Simpson is cited as: CS.

A blank in column G indicates either that the town is not listed by Cook and Simpson or that it appears in combination with other pueblos, and they have not presented a separate calculation. At the foot of the column, the Cook and Simpson estimate is totaled.

H. This column gives the average population, by pueblo, from the years *ca.* 1550 to 1610, according to our reckoning. Figures within brackets have been ignored in calculating the total, which appears at the foot of the column.

I. Language is indicated according to the following key: T, Totonac; M, Mexicano (including also cases listed by the sources as Nahua); O, Otomí; H, Huasteca; Tep., Tepehua. When linguistic affiliations are implied but are not stated explicitly, the entry is within brackets.

J. Sources are discussed in the text of Appendix A. Those which we have consulted are entered individually. Unpublished material used by Cook and Simpson, but not accessible to us, appears as CS, followed by a letter in parentheses, the latter referring to their key (Cook and Simpson, pp. 3–9).

In addition, two published sources are cited similarly, as CS, followed by a key letter. CS (A) refers to certain estimates made by Cook and Simpson, supposedly on the basis of data taken from the Suma de Visitas; we have not been able to determine the source of their figures. CS (L) refers to a document published by García Pimentel, 1904, in which we have been unable to locate for one pueblo, the data cited by Cook and Simpson.

In order to avoid repetition, subsequent explanatory notes are arranged by column; below, as in the table, the study of Cook and Simpson is cited as CS.

Column B

[1a] Appears in CS (p. 188) as "Mexcalcingo" but apparently is duplicated under Atzalan or Atzalán. The former (CS, p. 171) is attributed to the Bishopric of Tlaxcala but does not appear under that heading (CS, p. 136). Nevertheless, under No. 487 (CS, p. 232), the numerical index lists an Atzalán, which appears, without accent (CS, pp. 118–119) as a pueblo of Veracruz.

For this Atzalan, CS give a population figure ostensibly from the Suma, but authority for which we are unable to locate. Their second source (N) is López de Velasco, whose data apply, we believe, to the Atzalan which we have identified with "Mexcalçingo." It is not a matter of chance that López de Velasco (pp. 221–222) gives 1,700 tributaries for "Acala" and its subject pueblos, while source O of CS (p. 69) gives precisely the same figure for "Mexcalcingo."

In any case, we believe that the "Mexcalçingo" of our sources is to be identified with modern Atzalan, near Jalacingo. The Epistolario (14:80) mentions "Açalamescalçingo," clearly combining the two names. Moreover, it gives Andrés Dorantes as *encomendero*, as does the Suma (No. 351) for "Mexcalçingo" (see footnote 15 to this table). Doctrinas (p. 264) lists an "Açala," of Totonac speech, but unfortunately does not specify either *encomendero* or location. Nevertheless, the identity of "Mexcalçingo" with Atzalan is virtually clinched by other evidence. In 1597, Antonia de Benavides appears as *encomendera* of "Açala" (Epistolario 13:35), and she is the daughter of Alonso de Benavides, first *encomendero* of "Mexcalçingo" (García Pimentel, 1904, p. 169; Icaza, No. 281).

[2] Appears in CS, but population calculations are given in different combination.

[2a] Does not appear in CS.

[3] Appears in CS (pp. 132–133) as "Chicocentepec" ("Vera Cruz—unidentified"); also, under the same name, is allocated to "Vera Cruz [Naolingo]" (CS. p. 178).

[4] Appears in CS (p. 179) as Chiltoyac ("Bish. of Tlaxcala"), but is not included in the section (pp. 136–137) dedicated to the corresponding bishopric.

[4a] "Pangolotla" appears in CS (p. 132) under "Vera Cruz—unidentified," not under the "Bish. of Tlaxcala," as it is listed in their index.

Although CS (p. 132) give population figures for "Pangololutla," we have not cited them. In the first place, we cannot discover the source of the figure which they attribute to the Suma (their source A). In the second place, their source B refers not to "Pangololutla," but to a combination of Chiltoyac, "Pangololutla" and "Maçaltajola" (Epistolario 9:22). In the third place, their remaining source, L (García Pimentel, 1904, p. 170), lists the Chiltoyac trio mentioned above, but its population data appear to apply to a pueblo in Oaxaca.

[5] Appears in CS (p. 217) as "Zihuacoatlán."

[6] Appears in CS (p. 235) in company with pueblos grouped with Naolingo.

[6a] CS evidently have confused Jilotepec, of Veracruz, with "Jolotepec" and possibly with "Yolotepeque," of Oaxaca. Without detailed study of the Oaxacan material, we cannot say if the two latter pueblos are one and the same. There is one reference to the crown pueblos of "Xolotepeque" and "Xilotepeque," in Oaxaca (García Pimentel, 1904, p. 71). However, "Jolotepeque," "Yolotepeque," and "Ilotepeque" are attributed to Alonso de Castellanos (Epistolario 9:32, 13:38; García Pimentel, 1904, pp. 167–168). Through error, Alonso de Castellanos appears in CS (p. 185) as *encomendero* of Jilotepec, Veracruz.

Column B—Continued

It is the latter pueblo which is of direct concern to us; under its name, CS have combined data which apply both to it and to one (or more) Oaxacan towns. We have been unable to verify the figure which they attribute to source A (Suma). Their sources B and L definitely refer to Oaxaca (Epistolario 9:32; García Pimentel, 1904, pp. 167–168). Their sources D and N apply to the Jilotepec of Veracruz (Epistolario 14:80–81; López de Velasco, p. 219). Their source O refers to the *relaciones geográficas*, some of which are published in Paso y Troncoso, and others of which are not available to us. Although Paso y Troncoso (5:106) gives the number of tributaries found in Jilotepec of Veracruz, the figure does not agree with that which CS attribute to source O. It seems likely that here, too, their population refers to a town in Oaxaca.

To add to the confusion, under "Yolotepec" and "Jolotepec," in Oaxaca, CS (pp. 102, 106) give further population data.

[7] CS (pp. 66–67) give Mecatlán combined with Chila, apparently having identified our "Matlatlan" with Mecatlán. However, two distinct pueblos are involved. "Matlatlan" no longer exists, but both towns appear on a map (Carta general) of relatively recent date.

[8] Appears in CS (p. 168) as "Almería." The latter is definitively identified with Nautla ay numerous sources (Torquemada 1:521; Ixtlilxochitl 2:271; Epistolario 1:75–76; Oviedo 3:262; Clavijero 2:160).

[8a] Queried on our map, not because location is dubious, but because the report of Totonac speech applies to legendary times.

[8b] As well as other subject settlements.

[9] CS (pp. 66–67) erroneously identify "Matlatlan" with Mecatlán; see footnote 7, above.

[10] Listed by CS (p. 193) as "Paplocticpa."

[11] Tlacuilotepec appears once as such in CS (p. 208) and again as "Tlacolultepec" (CS, p. 208).

[12] CS (pp. 68–69) list two separate pueblos, "Matlaque" and "Tonatico" (incidentally, under No. 70, instead of No. 75; cf. CS, p. 221). We believe a single town is involved; our sources sometimes refer to it as "Matlaquetonatico," sometimes as "Tonatico." The CS total of 400 inhabitants has been cited in our table because, despite the fact that the two towns are entered separately, CS have combined the population.

Another "Tonatico" apparently appears in CS, although only one is to be found in their alphabetical index (p. 210). No. 75, of their numerical index, covers Jojupango, "Matlaque," and Tonatico," while No. 602 presumably refers to a different "Tonatico." On the CS map, No. 75 is in the vicinity of Jojupango, while No. 602 occupies the position of our "Tonatico."

[12a] Meade (pp. 289–290) and CS (pp. 122–123) identify "Tuzapan" with modern Tuxpan. However, the archeological site of "Tuzapan," on the Puebla-Veracruz border, is well known; and the Tajín Totonac speak of "Tuzapan" with considerable familiarity. Furthermore, many sources (Mendieta 4:95–96; Epistolario 9:22 and 14:77; García Pimentel, 1904, pp. 172–173; Doctrinas, p. 220; Ixtlilxochitl 2:37) make it clear that the two pueblos are quite distinct. See also footnote 32, below.

[13] Appears in CS (p. 185) under its ancient name of "Jicotepec."

[14] In CS (pp. 58–59, 223) the population of this pueblo is combined with that of Pahuatlán.

In Acaxochitlán proper, Mexicano and Otomí were spoken; but several subject settlements are said to have been Totonac. These include: "Quaquacala," "Chapantla," "Heloxochitlan," "Xolotla," "Navpa," "Tlaxpanaloya," and "Chachavantla." Most are difficult to identify, but it is clear that they were situated at no great distance from Acaxochitlán.

Column C

[15] The first *encomendero* was Alonso de Benavides (García Pimentel, 1904, p. 169). Although he appears in the Epistolario (9:18) as Alvaro de Benavides, his own family gives his name as Alonso (Icaza, No. 281).

Following his death, the property passed to his widow, María de la Torre (García Pimentel, 1904, p. 169). She married Andrés Dorantes (Epistolario 9:18), and, in 1553, Dorantes appears as *encomendero* (Epistolario 7:61). He died some time between that date and 1560 (Epistolario 9:18), so should not appear as *encomendero* in subsequent records (cf. CS, p. 188; Epistolario 14:80).

Eventually, the property passed to Antonia de Benavides, daughter of Alonso de Benavides and María de la Torre (García Pimentel, 1904, p. 169; Icaza, No. 281).

[16] Diego de Porras was the first *encomendero* (Epistolario 9:6). He died prior to 1553 (Epistolario 7:1–2), whereupon the *encomienda* passed into the hands of his daughter, María de Porras, and her husband, Juan de Cuenca (Epistolario 7:1–2, 9:6; García Pimentel, 1904, p. 156).

[17] We do not pretend to understand the sequence of *encomenderos*. The first was Lucas Gallego (Epistolario 9:15; García Pimentel, 1904, pp. 165–166). We have not made a thorough search but have come upon no mention of him later than 1527 (Millares and Mantecón, No. 347).

In 1551, Miguel Arias speaks of himself as "encomendero del pueblo de Cuacuaçintla" (Millares and Mantecón, No. 2605). In 1560 and 1565–1570, the *encomienda* is attributed merely to the son of Lucas Gallego (Epistolario 9:15; García Pimentel, 1904, pp. 165–166). But in 1569–71 and about 1570, Miguel Arias once more crops up as *encomendero* (Doctrinas, p. 242; Epistolario 14:81). It may be assumed that he was a relative, either by blood or by marriage, for the *encomienda* remained in the Gallego family, at least until the latter years of the century, when it was in the name of Domingo Gallego.

Paso y Troncoso (footnote 4, 5:109) suggests that Domingo Gallego may have been the son of Lucas Gallego; for the intrusion of Miguel Arias, he finds no explanation.

[18] Francisco de Montejo, the first *encomendero* (Garcia Pimentel, 1904, p. 157), must have died late in 1553 or early in 1554 (Epistolario 7:202). He was succeeded by his daughter, Catalina de Montejo, and by her husband. Although the latter appears in CS (p. 179) as Alvaro Maldonado, his wife twice refers to him as Alonso Maldonado (Epistolario 7:203, 10:80). Following his death, in 1564 (Epistolario 10:81), Catalina de Montejo continued to hold the pueblos granted originally to her father (García Pimentel, 1904, p. 157).

[19] Alonso de Villanueva, the first *encomendero*, was succeeded by his son, Augustín Villanueva (Epistolario 9:15). Catalina de Peralta was the latter's widow (Toussaint, p. 295).

[19a] Originally, half interest was granted to Alonso de Avila. Before his death it passed—through his daughter, as part of her dowry—to his son-in-law, Gonzalo de Salazar (García Pimentel, 1904, p. 169; see also Icaza, No. 431).

The other half was held in *encomienda* by Diego de Villapadierna, whose son, Diego (called Diego Padierna, in García Pimentel, 1904, p. 169), inherited his father's share.

[20] Pahuatlán and Acaxochitlán were given in *encomienda* to Luis de la Torre, and upon his death, they passed to the widow, Luisa de Acuña (García Pimentel, 1904, p. 155). Evidently he demised prior to 1560 (Epistolario 9:2), hence should not appear as *encomendero* as late as *ca.* 1565 (CS, p. 193).

[20a] Luis de la Torre was the first grantee (García Pimentel, 1904, p. 172), but as early as 1560 the pueblo had passed to his nephew, Juan de la Torre (Epistolario 9:22).

The first *encomendero* presumably was the same Luis de la Torre, who held Pahuatlán and Acaxochitlán (preceding footnote). If so, he died prior to 1560, hence could not have been *encomendero* of Pápalo as late as 1597. Presumably reference is to another individual of the same name, and of a younger generation.

Column E

In reckoning the average population, for entries in column H, the figures which appear in brackets have been excluded, for the following reasons:

[21] Date prior to *ca.* 1550.

[22] We have been unable to verify the estimate of CS, attributed to the Suma; in any case, we have precise data from other sources.

[23] Population figure conflicts with those of other sources. The Suma (No. 351) credits Atzalan with 1,300 tributaries, in *ca.* 1550; García Pimentel (1904, p. 169) gives the same figure for 1565–70. Other sources vary, but none as markedly as the Epistolario (9:18), which reports 3,900 tributaries in 1560.

[24] Population combined with that of Jalacingo (for which we have independent sources) and Altotonga, the latter on the borders of Totonacapan, but Mexicano in speech.

[25] Since only two subject settlements are included, whereas the Suma (No. 116) gives 8 and Doctrinas (pp. 233–234), 5. We have assumed, perhaps unjustifiably, that the "Mecatlan" and "Cocuitlan" which appear with Chichilintla (Epistolario 13:35) are subject settlements and not major pueblos.

[26] Because the García Pimentel data are garbled; the text implies that both Chiconquiaco and Miahuatlán are involved, yet with respect to population, the verb is singular. As a consequence, we cannot be sure if the figure applies to one or to both pueblos. For this reason, the population has not been counted here, nor is it listed under Miahuatlán (No. 23).

[27] Because the population of Chiconquiaco and Miahuatlán is combined, whereas we have separate figures for each pueblo.

[28] Because the population is given for Chiltoyac alone. We have a separate estimate for Chiltoyac, together with two other pueblos, "Pangololutla" and "Maçaltajola." The two latter do not figure in other sources, but we assume that they were of Totonac speech. Since we have no definite statement to that effect, neither "Pangololutla" nor "Maçaltajola" appears on map 1.

[29] Because the population of Jalacingo is given in combination with that of Altotonga and Tlapacoyan. For Jalacingo, we have separate data; the other two pueblos are on the borders of Totonacapan but were Mexicano in speech.

[30] The population of Meclatlán and Chichilintla is lumped; for each pueblo we have separate data.

[31] Because the population of Papantla and "Tuzapan" is combined; we have separate figures for each pueblo.

[32] Because the population is given for Papantla, "Tuzapan," and Tuxpan. For the first two, we have separate data; Tuxpan lies outside of our zone.

[33] Because the population of Jalpan, Tancoco, Tihuatlán, "Tuzapan," and Papantla is lumped. For Jalpan, Papantla, and "Tuzapan," we have separate data. Unfortunately, we have no information which would permit calculation of the population of Tihuatlán. Tancoco lies outside the limits of Totonacapan.

[34] Because the population of Ameluca, Pantepec, and Huitzila, is combined; we have separate estimates for each pueblo.

[35] The estimate for "Caxitlatongo" and Huitzila is lumped, and we have separate data for each pueblo. The entry (480) in column H is not an average but is the sum of the figures given separately for "Caxitlatongo" (No. 41) and for Huitzila (No. 49). Inasmuch as both these pueblos appear individually in the table, here the combined figure is in brackets, to avoid its being counted twice in our total.

[36] Because the population of Chila is given together with that of "Matlatlan"; we have separate data for each pueblo.

[36a] Because we have separe figures for Huauchinango; Ocelotepec is not part of Totonacapan.

[37] Because we prefer to consider the population of Hueytlalpan, together with "Esamayeco" and Zongozotla. For the latter, one source gives a separate figure (No. 71), but for "Esamayeco" we have no data except in combination with Hueytlalpan.

[38] Because the estimate excludes children.

[39] Because the estimate far exceeds that given by other sources. The Suma (No. 798) gives 534 tributaries, in *ca.* 1550. The Epistolario (14:78) and López de Velasco (p. 218) give 800 and 700 respectively, for *ca.* 1570 and 1571. Yet, in 1560, the Epistolario (9:19) credits Jojupango with 2,600 tributaries.

[40] Because the population of Jojupango and "Tonatico" is lumped, whereas we have separate information for each pueblo.

[41] Because the population of Pahuatlán here appears together with that of Acaxochitlán (No. 72); we have separate estimates for both pueblos.

[42] Tlacuilotepec is included with Pápalo, and for each pueblo we have independent estimates.

[43] Because the estimate is at variance with those of other sources. In 1560, the Epistolario (9:19) credits "Tonatico" with 600 tributaries. A decade earlier, the Suma (No. 529) allows only 236; and a decade later, the Epistolario (14:76–77) gives 100.

Footnotes to table 14—Continued

Column H

Figures within brackets have not been counted in the total at the foot of the column, for the following reasons:

[44] See footnote 24.
[45] See footnote 27.
[46] See footnote 28.
[47] See footnote 29.
[48] See footnote 30.
[49] See footnote 31.
[50] See footnote 32.
[51] See footnote 33.
[52] See footnote 34.
[53] See footnote 35.
[54] See footnote 36.
[54a] See footnote 36a.
[55] See footnote 37.
[56] See footnote 40.
[57] See footnote 41.
[58] See footnote 42.

[59] Because the population has been included with that of Hueytlalpan (No. 48); moreover, the source excludes children.

Column I

[60] The presence of Totonac and Mexicano is discussed in the text (pp. 6–7, 20).

[61] Mota y Escobar states explicitly that of the three pueblos, Atzalan alone is of Totonac speech.

[62] Both Totonac and Mexicano are reported, with the latter dominant, despite the fact that the pueblo is situated in the heart of Totonacapan. The Relación de Jojupango, on the contrary, reports only Totonac.

[63] This source alone reports Totonac speech in Jalacingo. We have not questioned the datum, since other pueblos, in the immediate vicinity, are Totonac.

[64] Only two sources mention Totonac speech in Jalapa. Ponce (1:186–187) states that Mexicano is spoken in the pueblo, Totonac in the outlying territory. Nevertheless, there is evidence of *caciques* of Totonac speech in Jalapa itself (AGN, No. 1).

[65] The source does not state in which pueblos each of the languages is spoken.

[66] The sources are contradictory; however, the statement of Mota y Escobar is based on first-hand observation.

[66a] See footnote 14.

Column J

[67] Source not indicated by CS.

TABLE 15.—*Language and population in modern Totonacapan*[1]

Key No., map 2	Municipal unit	Total population	Native speech												Other languages and all children under 5 years	
			Totonac				Tepehua		Mexicano		Otomí		Huastec			
			Monolinguals	Bilinguals	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent
	VERACRUZ															
1	Tantoyuca	29, 480							2, 708	9	12		14, 230	48	12, 530	43
2	Ixcatepec	5, 453							4, 470	82			3		980	18
3	Tancoco	3, 700							169	5	7		2, 203	60	1, 321	36
4	Amatlantepetl	7, 157		2	2				89	1	1		1, 293	18	5, 772	81
5	Tamiahua	14, 463		1	1				514	4	1		870	6	13, 077	90
6	Tepetzintla	9, 366							3, 546	38			37		5, 783	62
7	Chicontepec	23, 955							17, 028	71	3		2		6, 922	29
8	Temapache	22, 633		4	4				3, 254	14	173		24		19, 178	85
9	Benito Juárez	6, 109							4, 560	75					1, 549	25
10	Ixhuatlán de Madero	22, 242	443	208	651	3	1, 563	7	9, 639	43	3, 516	16			6, 873	31
11	Teayo	3, 353	3	8	11				254	8	70	2			3, 018	90
12	Tuxpan	31, 539	46	94	140		1		267	1	24		89		31, 018	98
13	Ilamatlán	8, 217							5, 563	68					2, 654	32
14	Zontecomatlán	6, 298					306	5	2, 759	44	1, 140	18			2, 093	33
15	Texcatepec	3, 911									2, 712	69			1, 199	31
16	Tlachichilco	6, 625					865	13	576	9	908	14			4, 276	64
17	Huayacocotla	12, 464							59		166	1			12, 239	98
18	Zacualpan	7, 255									531	7			6, 724	93
19	Tihuatlán	9, 514	802	578	1, 380	15			84	1	73	1	5		7, 972	84
20	Cazones	6, 463	513	1, 115	1, 628	25			49	1	14		9		4, 763	74
21	Coatzintla	13, 479	474	791	1, 265	9			30		7		2		12, 175	90
22	Papantla	34, 257	10, 774	6, 948	17, 722	52			147		8		1		16, 379	48
23	Gutiérrez Zamora	10, 433	123	580	703	7			84	1	3				9, 643	92
24	Tecolutla	4, 602	221	1, 597	1, 818	40			5		2				2, 777	60
25	Coahuitlán	2, 127	1, 078	325	1, 403	66			111	5					613	29
26	Coyutla	5, 647	2, 568	629	3, 197	57			51	1	1				2, 398	42
27	Espinal	4, 643	689	742	1, 431	31			124	3	1				3, 087	66
28	Mecatlán	2, 416	1, 429	81	1, 510	63			1						905	37
29	Chumatlán	1, 387	452	689	1, 141	82									246	18
30	Filomeno Mata	2, 491	1, 992	70	2, 062	83									429	17
31	Coxquihuí	5, 265	2, 432	888	3. 320	63			40	1	4				1, 901	36
32	Zozocolco	5, 325	2, 434	650	3, 084	58			110	2					2, 131	40
33	Martínez de la Torre	12, 597		176	176	1			133	1	20				12, 268	97
34	Nautla	4, 940							4						4, 936	100
35	Tlapacoyan	7, 725		2	2				24						7, 699	100
36	Atzalan	18, 611							20		1				18, 590	100
37	Misantla	14, 764	32	305	337	2			22		1				14, 404	98
38	Colipa	3, 086													3, 086	100
39	Vega de Alatorre	5, 277							1		8				5, 268	100
40	Jalacingo	11, 289							114	1	1				11, 174	99
41	Altotonga	19, 779							1, 697	9	2				18, 080	91
42	Tenochitlán	2, 877							1						2, 876	100
43	Yecuatla	4, 923	132	416	548	11									4, 375	89
44	Juchique de Ferrer	6, 183		2	2				14						6, 167	100
45	Minas, Las	2, 377							123	5					2, 254	95
46	Tatatila	3, 127													3, 127	100
47	Tlacolulan	4, 999		14	14				3						4, 982	100
48	Tonayán	2, 776		43	43	2									2, 733	98
49	Landero y Cos	901							610	68					291	32
50	Chiconquiaco	5, 121	33	311	344	7			1						4, 776	93
51	Alto Lucero	13, 067													13, 067	100
52	Villa Aldama	2, 327							24	1					2, 303	99
53	Vigas, Las	5, 221													5, 221	100
54	Rafael Lucio	1, 207													1, 207	100
55	Coacoatzintla	2, 191		196	196	9			5						1, 990	91
56	Banderilla	2, 638		2	2				1						2, 635	100
57	Jilotepec	4, 112		130	130	3			4						3, 978	97
58	Naolinco	8, 325		116	116	1			2						8, 207	99
59	Miahuatlán	1, 842													1, 842	100
60	Acatlán	1, 291		46	46	4									1, 245	96
61	Tepetlán	4, 272									1				4, 271	100
62	Acajete	3, 993							1						3, 992	100
63	Tlalnelhuayocan	1, 737							356	20					1, 381	80
64	Jalapa	46, 827		7	7				35		3				46, 782	100
65	Emiliano Zapata	13, 299		4	4				9		2				13, 284	100
66	Actopan	13, 701													13, 701	100
67	Coatepec	20, 855							11		3				20, 841	100
68	Jalcomulco	1, 990							720	36					1, 270	64
69	Apazapan	2, 340							5						2, 335	100
70	Puente Nacional	5, 124							4						5, 120	100
71	Ursulo Galván	8, 737													8, 737	100
72	Antigua, La	5, 144							2		2				5, 140	100
	Subtotal	633, 861	26, 670	17, 770	44, 440	7	2, 735		60, 237	10	9, 421	1	18, 768	3	498, 260	79

See footnote on page 263.

TABLE 15.—*Language and population in modern Totonacapan*—Continued

Key No., map 2	Municipal unit	Total population	Native speech												Other languages and all children under 5 years	
			Totonac				Tepehua		Mexicano		Otomí		Huastec			
			Monolinguals	Bi-linguals	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent
	PUEBLA															
73	Francisco Z. Mena	6,520	66	270	336	5	2	---	1,080	17	422	6	---	---	4,680	72
74	Pantepec	6,345	1,525	772	2,297	36	91	1	1	---	823	13	---	---	3,133	49
75	Jalpan	4,809	412	565	977	20	---	---	24	---	230	5	---	---	3,578	74
76	Tlaxco	3.974	8	7	15	---	---	---	124	3	424	11	---	---	3,411	86
77	Tlacuilotepec	10,061	2,091	995	3,086	31	---	---	681	7	438	4	---	---	5,856	58
78	Villa Juárez	12,806	35	90	125	1	---	---	3,236	25	149	1	---	---	9,296	73
79	Pahuatlán	9,530	---	---	---	---	---	---	1,749	18	1,475	15	---	---	6,306	66
80	Naupan	4,840	---	---	---	---	---	---	4,030	83	---	---	---	---	810	17
81	Huauchinango	17,700	479	81	560	3	---	---	6,450	36	3	---	---	---	10,687	60
82	Juan Galindo	5,144	---	7	7	---	---	---	849	17	6	---	---	---	4,282	83
83	Zihuateutla	3,099	310	409	719	23	---	---	946	31	2	---	---	---	1,432	46
84	Tlaola	8,104	24	---	24	---	---	---	4,890	60	---	---	---	---	3,190	39
85	Jopala	5,323	1,587	1,162	2,749	52	---	---	655	12	---	---	---	---	1,919	36
86	Chiconcuautla	7,343	1	1	2	---	---	---	4,821	66	3	---	---	---	2,517	34
87	Tlapacoyan	3,178	---	---	---	---	---	---	2,530	80	1	---	---	---	647	20
88	San Felipe Tepatlán	2,166	1,457	264	1,721	79	---	---	41	2	---	---	---	---	404	19
89	Hermenegildo Galeana	2,369	1,135	336	1,471	62	---	---	135	6	---	---	---	---	763	32
90	Olintla	6,947	5,019	581	5,600	81	---	---	1	---	---	---	---	---	1,346	19
91	Zacatlán	25,860	---	1	1	---	---	---	5,062	20	---	---	---	---	20,797	80
92	Ahuacatlán	6,451	2,135	42	2,177	34	---	---	2,702	42	---	---	---	---	1,572	24
93	Tepango de Rodríguez	1,892	1,241	289	1,530	81	---	---	---	---	---	---	---	---	362	19
94	Amixtlán	2,551	1,426	377	1,803	71	---	---	19	1	---	---	---	---	729	29
95	Coatepec	978	666	129	795	81	---	---	---	---	---	---	---	---	183	19
96	Huehuetla	7,815	3,902	2,052	5,954	76	---	---	114	1	---	---	---	---	1,747	22
97	Tuzamapan de Galeana	3,225	579	1,106	1,685	52	---	---	631	20	---	---	---	---	909	28
98	Tepetzintla	4,557	313	1	314	7	---	---	3,498	77	---	---	---	---	745	16
99	Zongozotla	1,489	1,065	229	1,294	87	---	---	26	2	---	---	---	---	169	11
100	Camocuautla	1,322	974	155	1,129	85	---	---	---	---	---	---	---	---	193	15
101	Hueytlalpan	5,488	3,126	943	4,069	74	---	---	178	3	---	---	---	---	1,241	23
102	Ignacio Allende	1,675	1,398	74	1,472	88	---	---	---	---	---	---	---	---	203	12
103	Jonotla	2,928	390	443	833	28	---	---	1,008	34	---	---	---	---	1,687	37
104	Tenampulco	2,589	---	392	392	15	---	---	69	3	---	---	---	---	2,128	82
105	Chignahuapan	17,195	---	---	---	---	---	---	3	---	---	---	---	---	17,192	100
106	Aquixtla	6,652	---	---	---	---	---	---	139	2	---	---	---	---	6,513	98
107	Tetela de Ocampo	15,882	1	4	5	---	---	---	4,009	25	---	---	---	---	11,868	75
108	Cuautempan	4,437	---	---	---	---	---	---	2,744	62	---	---	---	---	1,693	38
109	Huitzilan	5,031	---	1	1	---	---	---	4,319	86	---	---	---	---	711	14
110	Zapotitlán de Méndez	2,946	1,409	800	2,209	75	---	---	30	1	---	---	---	---	707	24
111	Xochitlán	5,788	---	---	---	---	---	---	4,506	78	---	---	---	---	1,282	22
112	Zoquiapan	1,636	---	---	---	---	---	---	1,399	86	---	---	---	---	237	14
113	Nauzontla	2,842	---	---	---	---	---	---	919	32	---	---	---	---	1,923	68
114	Cuetzalán del Progreso	21,270	---	---	---	---	---	---	8,698	41	---	---	---	---	12,572	59
115	Ayotoxco de Guerrero	1,232	---	---	---	---	---	---	679	55	---	---	---	---	553	45
116	Hueytamalco	5,951	51	496	547	9	---	---	379	6	1	---	---	---	5,024	84
117	Acateno	3,659	---	2	2	---	---	---	54	1	---	---	---	---	3,603	98
118	Xochiapulco	3,066	---	7	7	---	---	---	2,303	75	---	---	---	---	756	25
119	Zacapoaxtla	15,725	---	11	11	---	---	---	9,868	63	---	---	---	---	5,846	37
120	Yaonáhuac	2,324	---	---	---	---	---	---	1,863	80	---	---	---	---	461	20
121	Hueyapan	2,600	---	---	---	---	---	---	2,172	84	---	---	---	---	428	16
122	Ixtacamaxtitlán	17,487	---	---	---	---	---	---	1,912	11	1	---	---	---	15,574	89
123	Zautla [2]	5,086	---	---	---	---	---	---	3,307	65	---	---	---	---	1,779	35
124	Zaragoza	2,505	---	---	---	---	---	---	128	5	---	---	---	---	2,377	95
125	Tlatlauquitepec	14,695	---	1	1	---	---	---	4,710	32	---	---	---	---	9,984	68
126	Teteles	849	---	---	---	---	---	---	152	18	---	---	---	---	697	82
127	Atempan	3,694	---	---	---	---	---	---	1,980	54	---	---	---	---	1,714	46
128	Teziutlán	17,296	---	2	2	---	---	---	2,133	12	2	---	---	---	15,159	88
129	Chignautla	4,346	---	---	---	---	---	---	3,661	84	---	---	---	---	685	16
130	Xiutetelco	6,731	---	---	---	---	---	---	964	14	---	---	---	---	5,767	86
131	Cuyoaco	5,174	---	---	---	---	---	---	145	3	1	---	---	---	5,028	97
	Subtotal [1]	385,177	32,825	13,097	45,922	12	93	---	108,726	28	3,981	1	---	---	226,455	59
	HIDALGO															
132	Huautla	15,932	---	---	---	---	---	---	12,131	76	---	---	1	---	3,800	24
133	Yahualica	9,219	---	---	---	---	---	---	6,926	75	---	---	---	---	2,293	25
134	Xochiatipan	6,813	---	---	---	---	---	---	4,982	73	---	---	---	---	1,831	27
135	Tianguistengo	14,135	---	1	1	---	---	---	6,409	45	---	---	---	---	7,725	55
136	Zacualtipán	10,150	---	---	---	---	---	---	1,463	14	---	---	---	---	8,687	86
137	Metzquititlán	7,248	---	---	---	---	---	---	288	4	10	---	---	---	6,950	96
138	Metepec	4,713	---	---	---	---	---	---	---	---	6	---	---	---	4,707	100
139	Agua Blanca Iturbide	5,509	---	---	---	---	---	---	---	---	81	1	---	---	5,428	99
140	San Bartolo Tutotepec	14,046	---	---	---	---	---	---	472	3	6,349	45	---	---	7,225	51
141	Huehuetla	11,086	11	4	15	---	1,067	10	29	---	5,689	51	---	---	4,286	39
142	Tenango de Doria	8,391	---	---	---	---	---	---	---	---	2,877	34	---	---	5,514	66
	Subtotal [1]	107,242	11	5	16	---	1,067	1	32,700	30	15,012	14	1	---	58,446	54
	Total [1]	1,126,280	59,506	30,872	90,378	8	3,895	---	201,663	18	28,414	3	18,769	2	783,161	70

See footnotes on page 263.

Footnote to table 15

[1] This table shows the distribution of language and population in modern Totonacapan and environs. It is based on the 1940 data on file in the archives of the Federal census office, where the original material is recorded person by person, and community by community. However, in the table, grouping is by municipal unit. Publication of the data for each community would require many pages. Moreover, to have language distribution meaningful, it must be presented graphically (see map 2), yet it is quite impossible to locate all individual settlements within a municipal unit. No available map is sufficiently large-scale to show the smaller communities. Moreover, villages may spring up like mushrooms, only to be abandoned within a few years. In short, for practical reasons, we have chosen the larger, more stable, and easily identified municipal units. To be sure, this results in a less accurate picture, for it does not reveal the internal distribution of language and population. For example, it clouds the fact that in Huauchinango (No. 81), Totonac speech is effectively confined to two settlements and is not generally distributed throughout the municipal unit.

For each municipal unit, the table gives the incidence of Totonac, Tepehua, Mexicano, Otomí, and Huastec speech. We have considered Totonac the language which the census taker in Chapultepec (one settlement of Coaccatzintla, No. 55) has designated as "Zempoalteco." Native languages other than those just mentioned scarcely occur, and such isolated elements are included in the penultimate column. The latter also includes Spanish; a negligible ingredient of other Indo-European languages, chiefly French; and all children under 5 years of age, irrespective of speech.

In other words, the penultimate column gives merely the residue, once the occurrence of Totonac, Tepehua, Mexicano, Otomi, and Huastec speech has been deducted. Figures in this column are not based on an actual count of the census records. They have been derived by subtracting from the total population, as given in the 1940 published census, the combined incidence of the 5 native languages mentioned above.

In some communities, native-language monolinguals demonstrably are excessive, simply because the census taker has neglected to indicate the presence of Spanish speech. In these instances, we have calculated bilinguals on the basis of schooling and literacy. For example, if an individual has attended school several years or if he is credited with knowledge of reading and writing, it may be assumed that he controls Spanish, as well as his native language.

Only for the Totonac does our table distinguish between monolinguals and bilinguals, that is, Totonac-Spanish bilinguals. Entries under other languages include both monolinguals and persons who speak Spanish, in addition to a native language. Thus Mexicano monolinguals and Mexicano-Spanish bilinguals both appear in the tables as Mexicano. This is the reverse of the procedure followed in the published census, which recognizes only monolinguals as of native speech.

We find an expectable overlap in language. There are some Totonac-Mexicano bilinguals, as well as Totonac-Mexicano-Spanish trilinguals. Moreover, there are Mexicano-Otomí and Mexicano-Huastec bilinguals. We found no mention of Totonac-Otomí, Totonac-Huastec, or Otomí-Huastec bilinguals, nor did we find Tepehua combined with another native language.

In the table, native-language polyglots have been credited with each language concerned. Accordingly, a Totonac-Mexicano bilingual has been counted once as a Totonac (one who speaks no Spanish) and once as a Mexicano. A Totonac-Mexicano-Spanish trilingual is entered as a Totonac-Spanish bilingual and also as a Mexicano. In all such cases of overlap, the residue, shown in the penultimate column of the table, is not entirely accurate; it lacks the number of individuals who have been duplicated in the entries under native languages. As will be seen below, such duplication is numerically insignificant.

The whereabouts of native-language bilinguals should be of importance to anyone who contemplates linguistic work in the zone covered by the table. Accordingly, below, we give the specific occurrence of such accomplished individuals. Language is abbreviated thus: T, Totonac; M, Mexicano; O, Otomí; H, Huastec; S, Spanish (the latter specified only for those who likewise speak Totonac). The municipal unit is identified by number, to agree with the table, and the settlement within it is given by name.

Veracruz. 1. Tantoyuca, 7 M–H; Buena Vista (Chial Pérez), 1 M–H. 3. Teteco, 2 M–H. 4. Amatlantepetl, 5 M–H. 5. El Cafetal, 2 M–H. 17. Huayacocotla, 3 M–O. 21. Poza Rica, 1 T–M–S. 22. Joloapan, 1 T–M–S; Pajasco, 1 T–M–S; Paso de Correo, 2 T–M–S; Primero de Mayo, 2 T–M–S; Pueblillo, 4 T–M, 4 T–M–S. 27. Espinal, 1 T–M–S; El Pacífico, 1 T–M–S.

Puebla. 77. Palo Blanco, 1 T–M. 78. Villa Juárez, 1 T–M–S; San Agustín, 14 T–M, 4 T–M–S. 82. Necaxa, 1 T–M–S. 83. Ocomantla, 1 T–M; La Unión, 1 T–M–S. 86. Chiconcuautla, 1 T–M, 1 T–M–S. 92. Ahuacatlán, 1 T–M–S. 98. San Pedro, 1 T–M–S. 101. Ixtepec, 2 T–M–S; Zitlala, 2 T–M–S. 103. Jonotla, 6 T–M–S. 107. Taxco, 1 T–M; Tequiquilco, 1 T–M–S. 116. Tenexapa de Azueta, 1 T–M–S; Tepetitán, 2 T–M–S. 118. Cinco de Mayo, 4 T–M–S. 119. Zacapoaxtla, 1 T–M–S.

Hidalgo. No native-language bilinguals noted.

In addition to incidence, the table gives percent ratio, with the latter figures in italics. When less than 1 percent is involved, incidence is shown but percent ratio has been disregarded. An entry in italics opposite a subtotal or total indicates percent ratio calculated on the basis of subtotal or total population. Thus, the 72 municipal units in the State of Veracruz have a total population of 633,861. Of this figure, 44,440 persons, or 7 percent, speak Totonac. Similarly, the 142 municipal units in Veracruz, Puebla, and Hidalgo have a total population of 1,126,280; of this number, 90,378, or 8 percent, are of Totonac speech.

For some municipal units, the original records are incomplete. If the number of missing entries is negligible, no note is made here; but, in some cases, the data are so faulty that the picture may be altered somewhat. Such instances are listed below. Again, the municipal unit is identified by number, to agree with the table, while the individual settlement is entered by name.

Veracruz. 10. Cruz Blanca: page torn, ca. 30 entries missing; Tecalco: page torn, ca. 17 entries missing. 20. La Piedad: page torn, ca. 30 entries missing. 22. Morgadal: page torn, 11 entries missing; Poza Verde: entire sheet missing, with possibly 65 entries.

Puebla. 123. Record for half the settlements of the municipal unit of Zautla missing. The entry on the table is based on 8 settlements, with a total of 5,086 inhabitants; actually, the municipal unit consists of 17, with a total of 10,814 individuals. 125. Ocotla: entire page missing, with possibly 65 entries.

APPENDIX B

THE MEXICAN CONQUESTS

The account below is a summary of the conquests made by the ancient Mexicans, with special reference to Totonacapan and adjacent areas. There is a great wealth of source material concerning the military history of the Mexica, but it has been little exploited. Barlow (1947 a) recently has published a very useful summary, but with so little detail that, for our purpose, it was advisable to consult the original sources. This has resulted in a protracted and time-consuming study, and in the hope that other investigators may be spared the necessity of repeating the ordeal, we include herewith a general account of the Mexican conquests. Naturally, emphasis has been placed on the Gulf coast, which is of most interest to us. However, the maps indicate the full range of the conquests during the reign of each Mexican ruler; and authorities have been cited extensively, so that anyone who is interested may be able to locate the pertinent material without having to struggle with the entire body of raw data.

Our summary is based on the following sources:

a. Three key lists of the pueblos conquered by each Mexican ruler, to be found in the Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza. Nazareo has a similar list, apparently taken directly from the Códice Chimalpopoca, but his variant spellings occasionally assist in the identification of towns.

These lists give no internal chronology, other than that which possibly is implied by the order in which the towns appear. However, in other passages, both the Códice Chimalpopoca and the Anales de Tlatelolco have specific dates for a limited number of conquests, and these make it evident that the lists seldom are in chronological order. Generally, however, the pueblos are grouped roughly by province.

b. Additional listing of towns by districts is found in the so-called Matrícula de tributos, of the Colección de Mendoza. This enumerates the towns subject to Moctezuma II; there is, however, no clue to the chronology of conquests, and the pueblos subjugated by him and his predecessors are lumped. However, the grouping is geographical and therefore is of very considerable assistance in identifying conquered pueblos. The Matrícula manifestly is incomplete. To cite only one case, we know from Spanish sources that Moctezuma was extracting tribute from the Totonac pueblo of "Cempoala" in the early sixteenth century; yet the only town of that name in the Matrícula obviously is the Zempoala of modern Hidalgo.

c. Two authorities, the Codex Telleriano-Remensis and the Historia de los mexicanos por sus pinturas, give a limited number of conquests, with specific dates, but no full list of the vanquished pueblos.

d. Moreover, Tezozomoc (as well as Durán and the Códice Ramírez) and Torquemada provide running descriptions of the conquests, presumably in chronological order. With one exception, Tezozomoc cannot be interpreted in terms of precise years; but from time to time, Torquemada indicates during which year of the reign a certain event took place, and from these key points, a chronology of sorts can be extracted. Veytia we have not used extensively; in large part, his data on conquests seem to be drawn from Torquemada.

e. Collateral evidence concerning Mexican conquests comes from two Texcocan sources, the Códice en Cruz and Ixtlilxochitl, which give dates for some of the more important events in the history of Mexico-Tenochtitlan.

We have used only the more obvious records which are available in Spanish. But a person who controls Nahuatl and who has unlimited time at his disposition undoubtedly could draw on a much larger series of source material.

Before we turn to a discussion of the conquests, we may say that the more we work with these ancient records, the more impressed we are with their apparent reliability. By and large, there is a very gratifying agreement between the several accounts—an agreement which undoubtedly is owing in part to the fact that some of the sources are drawn from the same older picture codices. That is to say, we cannot asume that our several sources are entirely independent of one another. But as partial compensation, our records are not all from Mexico-Tenochtitlan. The sister city of Mexico-Tlatelolco is represented; the Códice Chimalpopoca is from the once important town of Cuautitlán, north of Mexico City; and two Texcocan sources are included. In any case, the major outlines seem pretty clear, and often there is surprising accordance even in detail. Some accounts are relatively full; some have manifest lacunae; some are biased. By pooling all, we feel that a reasonably reliable record results.

There are expectable differences in dates, since the events took place decades before the Spanish Conquest. Furthermore, even these may diminish appreciably, once Kirchhoff publishes his recent findings concerning calendar reckonings among the different pueblos in the vicinity of the Valley of Mexico. Conquests and wars for which the sources give dates, appear in tabular form, and when Kirchhoff's scheme is available, the indicated corrections can be made quite easily.

The great era of Mexican expansion began in the times of Moctezuma I and terminated with the arrival of the Spaniards during the reign of his namesake, the younger Moctezuma. In the course of this relatively short time span, from 1440 to 1520, the Mexica and their allies overran much of Mexico and even extended their conquests as far south as modern Guatemala.

We are not sure that the data warrant the use of "conquest" in our sense of the word; in many cases, raid for booty would be more accurate. A pueblo was defeated; tribute was exacted and presumably was to be continued indefinitely. But the frequency with which the same town was subdued again and again certainly indicates little integration and consolidation of gains.

Nevertheless, at least in later times, there is evidence of an extraordinarily efficient organization in many conquered areas. Mexican mayordomos were installed; there were garrisons at key points; and in some of the devastated districts, colonists from the Valley of Mexico were imported (Tezozomoc, pp. 349–350). Moreover, the professional traveling merchants functioned as effective spies, and not infrequently their arrival in a "foreign" zone was the harbinger of conquest.

EARLY CONQUESTS

The Mexicans who, as new settlers, wandered into the Valley of Mexico did not fare well at first, and it was a good many years before they were sufficiently established to embark on any program of expansion.

At the start, they were subject to Culhuacán, but eventually they moved from the lands of that pueblo and settled the site of Tenochtitlan, in the lake. There they lived in relative isolation, no longer subject to Culhuacán, but now tributary to the great Tepanecan center of Azcapotzalco (Torquemada 1:89, 97).

During the second half of the fourteenth century (the dates vary considerably in different sources), they selected as their leader, one Acamapichtli. Following his death, Huitzilihuitl became ruler and he, in turn, was followed by Chimalpopoca.

Several military victories are claimed for the Mexicans under these early leaders—but the Tenochca still were tributaries of Azcapotzalco, and the campaigns presumably are to be regarded as Tepanecan enterprises, in which the Mexicans, as vassals, participated. The majority of these early conquests were centered in the environs of the Valley of Mexico. But upon occasion, Azcapotzalco campaigns took the warriors of Tenochtitlan far from home base. Under Acamapichtli, they reached Cuautinchán, in modern Puebla (map 10, No. 1).[30] Under Huitzilihuitl, they journeyed to Tulancingo, in modern Hidalgo, and again, to Cuautinchán (map 11, Nos. 8, 14). During the era of Chimalpopoca, the Mexican warriors headed once more for Tulancingo, and apparently reached Orizaba (map 12, Nos. 7, 10, respectively). The conquest of these three pueblos is discussed in the notes to maps 10 to 12.

ITZCOATL (1427–40) [31]

Tepanecan rule became oppressive and led to the death of Chimalpopoca, concerning which there are various versions. He was succeeded by Itzcoatl, under whose rule the heretofore obscure Tenochtitlan emerged as a local power.

Mexico was rid of the Tepanecan yoke, as was Texcoco, and in 1431 (Códice Chimalpopoca, p. 48; Códice en Cruz, pp. 29–30) the legitimate Texcocan ruler, Netzahualcoyotl, was restored to power. Not only was Azcapotzalco destroyed, but other local Tepanecan pueblos were liquidated. Prudently, the ruler of Tepanecan Tacuba either had not participated in the conflict, or had offered only passive resistance, hence the victors proclaimed him the legal heir to the remnants of the Tepanecan realm.

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[30] Maps 10 to 18, showing Mexican conquests, will be found at the end of this appendix.

[31] Dates assigned the reign of Itzcoatl vary. Different sources start it in 1424, 1426, 1427, and 1428; we have followed the Colección de Mendoza (5: 44–45), which gives 1427. One source terminates his rule in 1439, but most agree that it ended in 1440. However, Durán (1: 123) mentions a version which would have Itzcoatl live until 1445.

With the restoration of Netzahualcoyotl in Texcoco, and with the recognition of Tacuba as heir of the now demised Azcapotzalco, the famous Triple Alliance came into being (Ixtlilxochitl 2:153–154; Torquemada 1:146). According to the agreement, the three powers—Tenochtitlan, Texcoco, and Tacuba—collaborated in war, and the spoils were divided in five parts, of which two went each to Tenochtitlan and Texcoco, and the remaining fifth, to Tacuba.

In the course of time (table 16), this military organization was felt over a great part of Mexico. Even in the days of Itzcoatl, campaigns were by no means confined to the Valley of Mexico. By the end of his rule, subject pueblos extended north to Tula (map 13, No. 22), in modern Hidalgo; east to Totimehuacán (map 13, No. 27), in Puebla; and south, into Morelos and on to Guerrero, where a number of important centers came under the control of the Triple Alliance. To the west, there were few conquests, a situation which held likewise for the succeeding reign, that of the elder Moctezuma.

TABLE 16.—*The dated wars of Itzcoatl (1427–40)*[a]

Key No., map 13	Pueblo	Códice Chimalpopoca	Anales de Tlatelolco	Historia de los mexicanos por sus pinturas	Ixtlilxochitl
1	Coatlinchán [1]	3 tochtli [1430] (pp. 46–48)			
2	Huexotla [1]				
3	Acolman [1]				
4	Tultitlán [1]				(2:151) 1428
5	Azcapotzalco [1,12]			*año* 108 [b] [1430] (p. 230)	
6	Coyoacán [1,8]		2 calli [1429] (p. 55)		
7	Xochimilco [1,15,c]				(2:152) 1430
8	Tepanecas [2,7,13]		1 tecpatl [1428] (p. 55)		
9	Cuernavaca [3,8]		6 calli [1433] (p. 55)		
10	Jaltocán [3]				(2:151) 1428
11	Tlahuac [4,15]	4 acatl [1431] (pp. 49, 66)			(2:152) 1430
12	Texcoco [6,8]		3 tochtli [1430] (p. 55)		(2:151–152) 1430
13	Tacuba [6]				(2:151) 1428
23	Cuautitlán			*año* 117 [1439] (p. 230)	(2:151) 1428
26	Matlatzincas [8,9]		5 tecpatl [1432] (p. 55)		
27	Totimehuacán [8]		7 tochtli [1434] (p. 56)		
31	Tlatelolco [5,10]			*años* 112,[b] [1434] 113 [1435] (p. 230)	
35	Churubusco				(2:151) 1428
36	Tenayucan				
37	"Tepanoaya" [14]				
38	Culhuacán				

[a] If the source indicates the date in the Mexican calendar, or by other local reckoning (Historia de los mexicanos por sus pinturas), it appears on the left side of the column, with the corresponding year in our calendar opposite. When the latter is based on calculation, either ours (Torquemada) or that of the editor (Códice Chimalpopoca, Anales de Tlatelolco), the date is bracketed.

In some cases, a source states definitely that a certain pueblo was conquered by the Mexicans in a given year. But in other instances, it reports war in a certain year, without identification of the aggressor, or without clear indication of the outcome. Or, it may state merely that the ruler of a certain pueblo "perished," or that the town was destroyed by "pestilence." Barlow (1947 d, p. 521) has pointed out that the latter, in the Códice Chimalpopoca, is a misleading translation from Nahuatl to Spanish and that reference actually is to Mexican conquest. In all the above instances, when other sources are confirmatory and report war with the Mexicans during the reign in question, the pueblo has been included in the table.

These doubtful cases are discussed individually in the footnotes to map 13. All numbered references in the table refer to the comments which accompany that map; lettered footnotes, concerned primarily with chronology, are appended below. Braces apply only to the columns within which they are placed.

[b] The dates given by this source (p. 230) for the wars with Azcapotzalco and Tlatelolco are somewhat ambiguous. For Azcapotzalco, the year might be interpreted either as *año* 108 or 112. We have chosen the former, which coincides roughly with the dating given by other sources; our impression is that the year 112 refers to Tlatelolco. The Colección de Mendoza also reports the conquest of Tlatelolco but does not date it.

[c] The Códice Chimalpopoca (p. 47) places the destruction of Xochimilco in the year 3 tochtli, but remarks (p. 48) that the Colhuas date it from the succeeding year, when Netzahualcoyotl was "crowned."

Mexican expansion was under way. By the year 5 tecpatl (1432), Itzcoatl "reigned in all parts and over the kings of the pueblos; it was when began, forever, the glory of the Tenochca Mexican" (Códice Chimalpopoca, p. 49).

MOCTEZUMA I (1440–69)[32]

The great era of Mexican expansion under the elder Moctezuma started modestly, with essentially local wars. Tezozomoc (pp. 74–76, 81–88) reports an initial combat with Texcoco, followed by one with "Chalco" (Tlalmanalco, map 14, No. 4; see footnote 3, map 11). Torquemada (1:151–153) begins the Mexican aggressions with "Chalco," which received intermittent pommeling until it finally was subjugated in 1465 (table 17, No. 4). With "Chalco" temporarily in hand, Moctezuma indulged in another local flurry, this with Tlatelolco (map 14, No. 50), the sister city of Tenochtitlan (Torquemada 1:157). Although its ruler was killed, Tlatelolco was not conquered until much later, in 1473, under Axayacatl (table 18, No. 3).

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[32] The terminal date discussed in footnote 47, p. 272.

It seems likely that early in his career Moctezuma made inroads in modern Morelos (map 14), which logically should have preceded his aggressions in northeastern Guerrero (Torquemada 1:157); Veytia (2:213) confirms the relationship between these conquests. The incursions in Morelos are entirely innocent of dating, but the other campaigns just mentioned took place prior to 1448, the ninth year of the reign (Torquemada 1:157).

With the completion of the Guerrero conquests there was a lull, but shortly thereafter Moctezuma looked toward the Gulf of Mexico. At this time, commercial relations with the provinces of the east coast were both extensive and intensive; professional merchants from the principal pueblos of the Valley of Mexico were active in the southern Huasteca and participated in the markets held every 20 days in "Tzicoac,"[38] Temapache, and Tuxpan (map 14, Nos. 48, 79, 78) (Tezozomoc, pp. 105–106).

It is precisely these merchants who were responsible for Moctezuma's first major campaign on the coast, because, for some reason or other, the Huastecan pueblos decided to exterminate them. Tezozomoc (p. 105) suggests that the cause was "envy, ill will, or the desire to rob them." However, in view of the role generally played by Mexican merchants, as precursors of conquest (Acosta Saignes, pp. 10–11), it seems not unlikely that the real cause was the understandable desire of the Huastecans to remain free of Mexican control. In any event, there was a general massacre, through the simple expedient of pushing the victims over a cliff. Following this, the Huastecans prudently erected a series of fortifications and awaited the outcome.

Traders from Tulancingo carried the news to Moctezuma (Tezozomoc, p. 105), who notified his allies—Netzahualcoyotl, of Texcoco, and Totoquihuatzin, of Tacuba—and the machinery of the Triple Alliance went into motion. The campaign was short. Divided into small political units (M. Cuevas, 1914, p. 221), the Huastecans apparently were not organized for concerted action. On the contrary, the Mexicans were good strategists and employed the device of hiding part of their troops until a critical moment. The vanquished Huastecans then took refuge on a hill and, by means of interpreters, asked for a truce, offering generous tribute, which Tezozomoc (p. 110) lists in detail. The Mexicans and their allies returned triumphantly and Moctezuma divided the spoils. There is no indication that he established his tribute collectors in the subdued pueblos,[34] and if we can believe Ixtlilxochitl,[35] it was Netzahualcoyotl, of Texcoco, who did so.

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[38] Melgarejo (n. d.), on the basis of a nineteenth-century statement, seeks to identify ancient "Tzicoac" with a modern settlement known as Dr. Montes de Oca, near Tuxpan. He does not accept the evidence of Meade (p. 290), who reports that a 1695 document (AGN, No. 18) identifies this ancient pueblo definitely with modern Chicontepec. In the same volume of the Archivo, Palerm has found parallel statements for the years 1693 and 1694.

There seems no real reason to doubt that Chicontepec and "Tzicoac" are one and the same. (1) The late seventeenth-century documents state so definitely; that for 1693 reads, "En el pueblo de chicoac o chicotzontepeque por otro nombre chicontepeque . . ." (2) Old "Tzicoac" is said by the Suma (No. 135) to have two subject settlements, "Aguatlan" and "Tilçipojapan"; the former still exists as Ahuatlán, the latter presumably, as San Pedro Tziltzacuapan (Mexico, Quinto censo, 1930), both in the general vicinity of modern Chicontepec. (3) The same *encomenderos,* Diego de Coria and Pedro de Meneses, are involved. Both are reported for "Tzicoac" (Suma No. 135; Epistolario 9:9; García Pimental, 1904, p. 159; Icaza, Nos. 12, 65). For Chicontepec, Hernando de Coria and Pedro Bermudes are given (Epistolario 14:75). But this difference results merely from the fact that the latter record is from a subsequent period, for we know that in "Tzicoac," Diego de Coria was succeeded by his son, Hernando de Coria, and Pedro de Meneses, by his son, Pedro Bermudes (García Pimentel, 1904, p. 159). In short, ownership is identical.

There seem to be, in fact, only two difficulties. The Códice Chimalpopoca (p. 64) lists both Chicontepec and "Tziuhcóhuac" in the same paragraph, which suggests that they are distinct towns. And the linguistic situation is not entirely reassuring. Tezozomoc does not state definitely that "Tzicoac" is in the Huasteca or that it is Huastecan in speech. But he speaks (p. 105) of the massacre of Mexican merchants there and in Tuxpan; and later, in the course of reprisals, he refers (p. 109) to the enemies as Huasteca. Still later (pp. 292, 294–295), he again implies that "Tzicoac" is Huastecan. Durán (1:165) mentions "the Huasteca of Tamapachco and Xochpan and of Tzincoac . . ." The general impression certainly is that "Tzicoac" is a Huastecan pueblo.

With respect to the speech of Chicontepec, we have found only two sixteenth-century reports. One gives Mexicano, Tepehua, and Otomí for the *cabecera* and its subjects (Doctrinas, p. 219); the other mentions only Mexicano (Epistolario 14:75). Accordingly, if "Tzicoac" is to be identified with Chicontepec, it must be assumed that both Tezozomoc and Durán are speaking loosely—in terms of the general area which lies to the northeast of Mexico, and not in terms of a zone where Huastecan speech was current.

The route of the conquest is not clear. On the trip to the Huasteca, the troops passed through Tulancingo (Tezozomoc, p. 107), but no further details of itinerary are given. Tezozomoc (p. 111) indicates that on the return, the pueblos along the way either received the conquerors with gifts of food or they were pillaged. Papantla, a relatively short distance from Tuxpan, is not listed among the conquests of Moctezuma I, and claims to have preserved independence until half a century later, when it was subjugated by Moctezuma the younger (Relación de Papantla).

As a matter of fact, it seems unlikely that any real penetration of northern Totonacapan took place during the reign of Moctezuma I. Krickeberg (p. 106) notes that several towns "on the limits of Totonac territory" were conquered at this time, and Barlow (1947 a, map 4) would have virtually all of Totonacapan subjugated by Moctezuma, with exception of the immediate environs of Papantla. This alleged penetration, which is of direct concern to us, depends upon the identification of four pueblos: Chiconquiaco, Tlapacoyan, "Chapolicxitla," and Tlatlauquitepec, which are discussed one by one, in the note below.[36]

For Chiconquiaco and Tlapacoyan, alternate identifications are considered, and although Tlatlauquitepec undoubtedly lay on the fringes of Totonacapan, it was Mexicano in speech.[36] For "Chapolicxitla" no identification can be suggested. In view of this situation, we believe there is no indication of the conquest of pueblos of northern Totonacapan at this time; in any case, none of the four pueblos in question, seems to have been Totonac during the sixteenth century.

It is not unlikely that Moctezuma made his first gestures toward subduing the southern Gulf coast following the Huastecan campaign. Tezozomoc (p. 106) and Ixtlilxochitl (2:197) both mention Tuxtepec in connection with the conquests in the Huasteca. The campaign would be more intelligible if Tuxtepec were easily accessible from the Huasteca. There seems to be no record of any ancient pueblo of this name in the vicinity, and the reference presumably applies to the pueblo on the Oaxaca-Veracruz border. Perhaps, therefore, the Triple Alliance made an initial thrust to the south simultaneously with its efforts in the north. If so, following the Huastecan campaign, Mexico had bases in the southern Huasteca and far to the south, in Tuxtepec.

The date of the Huastecan campaign (table 17, No. 48) is given by the Codex Telleriano-Remensis (5:150) as the year 5 *conejos* [tochtli], or 1458. Torquemada (1:164) makes passing reference to the conquest of "Cuextlan," which must have taken

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[34] As a matter of fact, the Códice Chimalpopoca (p. 67) does not even list these Huastecan pueblos among the conquests of Moctezuma.

[35] And it is very much the vogue not to; even the editor of his works never wearies of doubting his veracity. We feel, however, that the value of Ixtlilxochitl is greatly underestimated.

[36] Chiconquiaco is the name of a modern Totonac pueblo northwest of Jalapa. However, its position in the lists of conquests suggests that identification with modern Chiconquiahuitl, (map 14, No. 10) in the State of Mexico, is more likely; in this, Barlow (1947 a) concurs.

Tlapacoyan is a disconcertingly popular name. Krickeberg (p. 112) is torn between two possibilities: a town near Zacatlán, Puebla, and one on the Río Nautla. He inclines toward the latter. Of these two alternatives, we think that the Tlapacoyan (map 14, No. 28) near Zacatlán is the more likely, and at the same time, we offer a third possibility: Tlapacoya near Pachuca, in the modern State of Hidalgo. There is no evidence, incidentally, that any of the pueblos named Tlapacoyan were of Totonac speech.

The Códice Chimalpopoca (p. 67) lists the conquests in the following order: "Itzcuincuitlapilco, Tlapacoyan, Chapolicxitla, Tlatlauhquitépec." The first undoubtedly is modern Itzcuinquitlapilco, in Hidalgo; "Chapolicxitla" is unplaced. The Colección de Mendoza (5: 45) gives a slightly different listing: "Yzcuincuitlapilco . . . Atotomilco . . . Tlapacoyom . . . Chapolycxitla . . . Tlatlauhquitepec." Here the first two pueblos are to be identified with modern settlements near Pachuca, in Hidalgo; again, "Chapolicxitla" is not placed.

In the Matrícula de tributos (Colección de Mendoza 5:85), Tlapacoyan heads a list which includes "Xiloxochitlan, Xochiquauhtitlan, Tuchtlan, Coapan, Aztaopan, and Acaçacatla." Unfortunately, these towns, which should indicate the zone definitively, are difficult to identify. "Xiloxochitlan" perhaps is modern Eloxochitlán, and "Xochiquauhtitlan" may be Xochicoatlán, both in Hidalgo. However, in the vicinity of Zacatlán, in the Sierra de Puebla, we find modern Eloxochitlán, Xochicuautla, and Tuxtla. In other words, the conquered Tlapacoyan might be either that of Hidalgo or of the Sierra de Puebla. On map 14 (No. 28), the latter is shown.

Obviously, an identification of "Chapolicxitla" would be of utility in locating both Tlapacoyan and Tlatlauquitepec. Krickeberg (p. 106) places it, together with the two pueblos just mentioned, on the borders of Totonac territory. However, we are unable to suggest identification with any existing pueblo; its position on map 14 (No. 29) is frankly a guess.

Like Tlapacoyan, Tlatlauquitepec (map 14, No. 30), is a popular town name. However, its identification presents no problem, since the Matrícula de tributos makes it clear that the conquered pueblo is the one which lies in the Sierra de Puebla, between Zacatlán and Teziutlán. Although on the borders of Totonacapan, in the late sixteenth century this pueblo was Mexicano (Epistolario 14: 79), and in 1609 its inhabitants spoke "mexicano algo tosca" (Mota y Escobar, p. 196).

TABLE 17.—*The dated wars of Moctezuma I (1440–69)*[a]

Key No., map 14	Pueblo	Códice Chimalpopoca	Anales de Tlatelolco	Historia de los mexicanos por sus pinturas	Codex Telleriano-Remensis	Torquemada	Códice en Cruz	Other sources
1	Tlahuac [1]	1 calli [1441] (pp. 50, 51)	----	----	----	----	----	----
2	Coixtlahuaca [8,32,35]	5 tochtli [1458] (p. 52)	5 tochtli [1458] (p. 57)	*año* 139 [1461] (p. 231)	----	[1455] (1:160)	5 tochtli 1458 (pp. 51, 52, 145)	----
3	Tehuacán [2, 35]	8 calli [1461] (p. 53)	----	----	----	----	----	----
4	Tlalmanalco [3,11,17,35]	12 calli [1465] (pp. 53, 67)	11 tecpatl [1464] (p. 59)	----	12 *casas* [calli] 1465 (5:151)	[1448] (1:158, 164)[b] [1458]	12 calli 1465 (pp. 53, 54, 145)	----
5	Huehuetlán [4]	12 calli [1465] (p. 53)	----	----	----	----	----	----
6	Tepeaca [35]	13 tochtli [1466] (p. 54)	13 tochtli [1466] (p. 59)	----	----	[1459] (1:164)	----	----
7	Coatepec [8]		1 calli [1441] (p. 56)	----	----	----	----	----
8	Tecalco [35]		----	----	----	----	----	----
9	Cuautinchán		----	----	----	----	----	----
14	Cotaxtla [3, 35]	----	10 acatl [1463] (p. 57)	*año* 141 [1463] (p. 231)	8 *casas* [calli] 1461 (5:150)	[1457] (1:161)	----	Veytia (2:219) 1457
15	Huatusco [8, 35]	----	8 calli [1461] (p. 57)	----	----	[1457] (1:160, 161)	----	----
25	Cuautipan [6, 32]	----	----	----	----	----	3 tecpatl 1456 (pp. 45, 51)	----
32	Oxtotipan [8]	----	2 tochtli [1442] (p. 56)	----	----	----	----	----
33	Cohuixca [9]	----	2 acatl [1445] (p. 57)	----	----	----	----	----
48	Chicontepec [36]	----	----	----	5 *conejos* [tochtli] 1458 (5:150)	----	----	Tezozomoc [1452] (pp. 116, 119) Códice Ramírez [1450] (p. 177)
49	Jiquipilco [15]	----	----	----	9 *conejos* [tochtli] 1462 (5:151)	----	----	----
59	Tuxtepec [36]	----	----	----	----	[1455] (1:160)	----	----
60	"Tepçol" [22]	----	----	----	----		----	----
61	Zapotitla	----	----	----	----		----	----
62	Totutla	----	----	----	----		----	----
63	"Tatatelco" [24]	----	----	----	----		----	----
64	"Chinantla" [25]	----	----	----	----		----	----
65	"Quauhnochco" [26]	----	----	----	----		----	----
66	Cosamaloapan	----	----	----	----	[1456] (1:160)	----	----
67	"Cuextlan" [27]	----	----	----	----	[1459] (1:164)	----	----
68	Tlacuilola	----	----	----	----		----	----
69	Coxolitla	----	----	----	----		----	----
70	Tamazola	----	----	----	----		----	----
71	Acatlán	----	----	----	----		----	----
72	Piaxtla	----	----	----	----		----	----
73	Tetzoyocan	----	----	----	----		----	----
74	Jilotepec	----	----	----	----		----	----
75	"Toçoco" [28]	----	----	----	----		----	----

[a] See the first two paragraphs of footnote a, table 16. Dubious conquest or doubtful pueblo identification is discussed in the notes which accompany map 14; numbered notes in the table refer to the comments appended to that map. Braces apply only to the column in which they are placed.

[b] The difference in date between Torquemada (1: 158) and other sources with respect to the war with the Chalcas of Tlalmanalco is explicable on the basis of distinct campaigns (footnotes 3, 11, 17, 35, map 14). Torquemada (1: 164) gives another date, calculated at 1458, which presumably applies to the definitive surrender.

place about 1459; but it would appear that this applies, not to the Huasteca, but to a pueblo on the southern Gulf coast.[37]

Tezozomoc (pp. 116, 119) gives indirect evidence which would place the Huastecan war somewhat earlier. According to him, Huastecan prisoners were sacrificed during the fifteenth year of the reign of Moctezuma, which would be 1454.

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[37] Unfortunately the term "Cuextlan" is ambiguous, for which reason Torquemada's conquest is not included in map 14.

The old sources generally use "Cuextlan" as synonymous with the Huasteca. However, on the southern Gulf coast, a pueblo later conquered by the Triple Alliance bears the name of "Cuextlan" (Tezozomoc, p. 131, and footnote 2, pp. 145–146).

Indirect confirmation of the existence of this southerly pueblo is found in Ixtlilxochitl (2: 202), who reports a Texcocan campaign directed against "Cuexteca que es Panuco." But, with one exception, the identified pueblos which were conquered in the course of this war lie far to the south, in southern Puebla and adjacent Veracruz. And it cannot be a matter of chance that, along with his "Cuextlan" conquest, Torquemada (1: 164) enumerates five of the precise pueblos listed by Ixtlilxochitl (map 14, Nos. 68, 69, 71, 72, 73), as well as two more, one in northwest Oaxaca and another in central Puebla (map 14, Nos. 70, 74). It seems likely that both authors are using sources which refer to a campaign directed against the "Cuextlan" of the southern Gulf coast; but since the name more frequently is associated with the Huasteca, Ixtlilxochitl erroneously identifies this southerly "Cuexteca" with Pánuco.

To add to the confusion, in certain instances "Cuextla" evidently is synonymous with Cotaxtla (see footnote 18, map 15); yet the latter is not to be identified with the somewhat hypothetical pueblo mentioned above, for Tezozomoc (p. 130–131), twice mentions "Cuetlaxtlan" and "Cuextlan," in the same phrase.

But in honor of the occasion, the temple was prepared especially, an undertaking which required 2 years. Accordingly, the conquest would fall during the thirteenth year, or in 1452. The Códice Ramírez (p. 177) differs slightly, placing the campaign in the eleventh year, or 1450.

Not content with his laurels, Moctezuma embarked on a second campaign, which was designed to place the southern Gulf coast in the hands of the Triple Alliance. He took the initiative by sending an embassy to the rulers of "Cempoala" and "Quiahuixtlan"—two coastal Totonac centers—asking that they send him "fine shells, turtles, and pearls," stipulating, moreover, that "the turtle be alive" (Tezozomoc, p. 122). According to current custom, acceptance would have been an act of submission. Perhaps Moctezuma believed that the Totonac, impressed by his victories in the north, would offer no resistance (Durán, 1:180). But such was not the case, and with this demand, the first Cotaxtla war began.

For some obscure reason, the ambassadors of Moctezuma did not go to "Cempoala" and "Quiahuixtlan"; instead, they journeyed via Orizaba to Cotaxtla, on the southern Gulf coast, where they announced their intention of continuing to "Cempoala." At the moment, there were Tlaxcalan visitors in Cotaxtla; they said indignantly to their hosts, "By chance, are you slaves or tributaries of the Mexicans? Have you been conquered in war?" They induced the Cotaxtlans [38] to kill the messengers, and offered the military support of Tlaxcala in case of reprisal. There was a general massacre of Mexicans, both official messengers and merchants, in Cotaxtla, in "Quiahuixtlan," and in the environs of Tlaxcala.[39] The Tlaxcalans returned happily to home base, bearing handsome gifts, lavished upon them in return for their moral support, and the Cotaxtlans awaited repercussions from Mexico.

They did not wait long. A few merchants who escaped notified Moctezuma, and the forces of the Triple Alliance were mustered. They marched on Orizaba and Cotaxtla (map 14, Nos. 82, 14) and extended their conquests far to the north. The great Totonac center of "Cempoala" (map 14, No. 80) fell, and with it, "Ozeloapan" [40] (map 14, No. 89) and apparently "Quiahuixtlan" (map 14, No. 81). The inevitable arrangements were made for collecting tribute and Moctezuma installed his local representative as "mayordomo a *Cuetlaxtlan, Zempoala* y *Cuextlan*" (Tezozomoc, p. 131).

The dating of this Cotaxtla campaign (table 17, No. 14) is confused.[41] Tezozomoc (p. 122) has it follow the Huastecan conquests (which he appears to place in 1452) and precede the war with Coixtlahuaca, in the Mixteca. Durán (1:180) is in agreement; and the Códice Ramírez (pp. 177–178) gives the same sequence, although with a difference of 2 years. In other words, the three sources which are related to the hypothetical

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[38] This passage of Tezozomoc (pp. 122–123) unfortunately is confusing. He speaks first of dual leadership at Cotaxtla, with one chief called Zeatonalteuctli, the other, Tepeteuhtli. Immediately thereafter, he has the Tlaxcalans address "the king of Cuetlaxtlan and Zempoala," which implies not only a single ruler, but a single one for both pueblos. Yet in the next breath, he speaks of the "principales de la costa."

As a result, it is not easy to understand the local political situation. There is a bare chance that we have here an indication of Cotaxtla dominance over "Cempoala," which might explain why the messengers of Moctezuma headed for Cotaxtla instead of going direct to "Cempoala" and "Quiahuixtlan."

[39] Durán (1:180–181) and the Códice Ramírez (p. 178) have the Mexican embassy remain in Orizaba, while the latter pueblo sent messengers to Cotaxtla, to relay Moctezuma's request. According to this version, the embassy was slaughtered in Orizaba, not in Cotaxtla.

[40] "Ozeloapan" presumably is to be identified with the late Totonac archeological site of the same name, between Jalapa and Veracruz (García Payón, 1947, p. 308).

Other pueblos conquered at this time included: *"Chichiquilan, Teoyzhuacan, Quimichtlan, Tzactlan* ["Tzauctla," Durán 1 : 185], *Macuixochitlan,* [and] *Tlatictlan"* (Tezozomoc, p, 128).

Chichiquila, "Teoyzhuacan" (modern Ixhuacán), and Quimixtlán (map 14, Nos. 83, 84, 85) lie southwest of Jalapa, on the Puebla-Veracruz border; during the sixteenth century, all were Mexicano in speech (Epistolario 14 : 86; Paso y Troncoso 5 : 122–123). "Tzactlan" or "Tzauctla" perhaps is to be identified with modern Zacatla (map 14, No. 86). Modern Zautla, in Puebla, seems too far north and west to have been included in this campaign.

The identification of the remaining pueblos is problematical. We find mention of a "Macuilsuchil" in Oaxaca and of a "Macuilsuchitl" in the Pánuco (Suma, Nos. 348, 353; Colección de Mendoza 5 : 80). Both seem too distant. Another possibility is "Macuilxochitlan," located by the Codex of Tonayan (Barlow, 1947 b) in the broken country just north of Jalapa. This pueblo must have been relatively obscure, for we find no other report of it. If the "Macuixochitlan" conquered by Moctezuma is identified with this pueblo (map 14, No. 87), his conquests would be extended thereby into the Totonac zone immediately north of Jalapa. Such an extension is not out of the question, especially since the area abuts on "Ozeloapan" (map 14, No. 89); nevertheless, it seems odd that of all the pueblos in this zone, this presumably insignificant one alone is mentioned. In the lists of Tezozomoc and Durán, "Macuixochitlan" follows Quimixtlán and "Tzactlan" and precedes "Tlatictlan," rather suggesting a location in the Chichiquila-Quimixtlán area southwest of Jalapa.

In name, "Tlatictlan" may have survived in modern Tetitlán (map 14, No. 88) or Tatela, respectively east and southeast of Chichiquila. But current maps place both modern settlements well up the slopes of the Sierra, whereas, in 1609, "Tlatectla" (presumably old "Tlatictlan") was located in the hot country (Mota y Escobar, p. 206).

[41] It is discussed further, following the second Cotaxtla campaign (footnote 45, p. 272).

Crónica X (Barlow, 1945) have the first conquest of Cotaxtla follow the Huastecan campaign and precede the conquests in Oaxaca.[42]

Other sources, not Crónica-X derived, are at variance, for they make no mention of Cotaxtla until after the Mixtecan war. Accordingly, there are two alternate interpretations:

a. If one follows the Crónica X cluster, Moctezuma sponsored two distinct Cotaxtla campaigns, one prior to his conquests in the Mixteca, and another subsequent to them. The first, or pre-Mixteca campaign, is that described above; the second is treated below.

In this case, the implication is that the other sources have overlooked the first Cotaxtla war and start with the second, post-Oaxaca campaign. Their dating, therefore, applies not to the first campaign of the Crónica X, but to the second.

b. However, if one follows the other authorities, he must assume that the Crónica X sources erroneously place the first Cotaxtla campaign as prior to the Mixtecan war; also, that they erroneously attribute two Cotaxtla campaigns instead of one to Moctezuma (see footnote 45, p. 272).

There is much to be said for either interpretation. We have elected to follow the Crónica X accounts, simply because they alone give a wealth of detail concerning the Cotaxtla campaigns, and because their identification of both with Moctezuma is highly convincing. Accordingly, we assume that the first Cotaxtla campaign took place prior to the conquest of the Mixteca, which latter is dated variously as 1455, 1458, and 1461 (table 17, No. 2).

Following the signal victory over Cotaxtla, which put a large segment of the southern Gulf coast, including southern Totonacapan, in the hands of the Triple Alliance, the latter turned its attention to the Mixteca, and the conquest of Coixtlahuaca ensued. This Mixtecan war was intimately related to the program of expansion toward the coast, for it involved a large part of the hinterland. As a result of this campaign, Moctezuma strengthened his position in the zone southwest of Jalapa and, through conquest to the south, extended his power to the Cosamaloapan drainage. The conquest of Cosamaloapan itself followed (Torquemada 1:160). These were the antecedents of the second Cotaxtla war.

Since their conquest, some years before, Cotaxtla and southern Totonacapan had been chafing under tribute demands. A second war broke out, with the uprising of Orizaba, Cotaxtla, and "Cempoala." And for the second time, Tlaxcala appeared as instigator. Visitors from that province persuaded the subject pueblos to kill the Mexican tax collectors, again promising military assistance from Tlaxcala (Tezozomoc, p. 142). Delighted, the coastal pueblos delivered to the Tlaxcalans the tribute they had been gathering for Moctezuma, and the recipients again returned home, bearing gifts.

Moctezuma's tribute collectors now appeared in Cotaxtla, with hands outstretched. They were cordially received, but immediately thereafter were imprisoned in a room, where they were suffocated by the smoke of burning chili. Later, the corpses were removed, ridiculed and maltreated (Tezozomoc, p. 143). Visiting merchants carried the word to Moctezuma. Infuriated, he pronounced judgment: "My desire is that there be no Cotaxtla, that it be totally destroyed and devastated." His counselors replied, "This will not be possible . . . it will be sufficient that half of them die . . . and of the half that remains, they may give and pay double the tribute . . ."

The allied forces marched on Orizaba and the struggle extended to the zone at large. Tlaxcalan assistance was conspicuously lacking, and the Mexicans triumphed.[43] Tribute adjustments were made and the forces of the Triple Alliance retired. The two leaders of Cotaxtla went into hiding, but later Moctezuma dispatched a special contingent charged with their execution (Tezozomoc, p. 148; Códice Ramírez, p. 180).

We have several definite dates for this victory: 1457, 1461, and 1463 (table 17, No. 14). In addition, Torquemada indicates a date which must be in the vicinity of 1457.[44] Regardless of date,[45] by the end of the second Cotaxtla war, Moctezuma and the Triple Alliance had overrun much of the Gulf coast. In the north, they held a cluster of pueblos in the southern Huasteca. Immediately to the south, there was a sizable island of unconquered territory in northern Totonacapan.[46] But farther south, the allied forces had made a clean sweep. The important southern Totonac centers—"Cempoala," "Quiahuixtlan," and "Ozeloapan"—had been conquered during the first Cotaxtla campaign, and by the end of his reign, Moctezuma controlled the coast, from "Cempoala" to Cosamaloapan. Moreover, he held a great block of hinterland (map 14).

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[42] When Moctezuma conquered Coixtlahuaca, in Oaxaca, he already had both the Huasteca and Cotaxtla in his pocket, for the stone monument, which was dedicated with the sacrifice of Mixtecan prisoners, bore carved figures to represent his victories in Tepeaca, Tuxpan, the Huasteca, Cotaxtla, and Coixtlahuaca (Códice Ramírez, p. 179).

This detail would be highly convincing, were it not nullified by Veytia (2:219). He mentions this same stone, but has the dedication take place later, with the sacrifice not of Mixtecan but of Cotaxtlan captives.

[43] The above account is based chiefly on Tezozomoc, who naturally gives the viewpoint of Mexico-Tenochtitlan. But it would appear that this victory really belongs to Mexico-Tlatelolco (Torquemada 1:162; Barlow, 1948, pp. 26–30).

Torquemada (1:161–162) gives a distinct version of the campaign. He makes no mention of the first Cotaxtla war, and the one he describes presumably is the second. In this battle he has Tlaxcala, Cholula, and Huejotzingo aid the coastal pueblos; and in this the Anales de Tlatelolco (p. 57) concur.

Probably these are to be regarded as nominal conquests: there was a battle; the Mexicans were victorious and imposed tribute. But that they did not have a strangle hold on the coast is clear from the frequency of subsequent revolts. There is no indication that Moctezuma established either garrisons or Mexican overseers in the northern stretch of the coast, although Ixtlilxochitl (2:196–197) claims that Texcoco did so. After the first Cotaxtla war, Moctezuma installed a mayordomo for the "Cempoala"-Cotaxtla zone; and following the second, both governors (Tezozomoc, p. 149) and garrison were imposed (Torquemada 1:162). Even this move did not make the conquest permanent. The immediate successors of Moctezuma added relatively little new conquered territory along the Gulf but they were busily occupied in suppressing uprisings.

AXAYACATL (1469–81)[47]

With the death of Moctezuma I, Axayacatl replaced him as ruler. He started with a "precoronation" raid far to the south, in order to obtain prisoners for sacrifice (Torquemada 1:172). Tehuantepec and Huatulco are mentioned, but there is no indication that pueblos at such a distance were incorporated into the Mexican realm at this time. Also early in his career, Axayacatl conquered Tlatlauquitepec, which might be one of several pueblos of that name; we have placed it (map 15, No. 1) doubtfully in the State of Puebla, adjacent to several other conquests of Axayacatl.

However, his first major undertaking was the conquest of Mexico-Tlatelolco, the sister city of Mexico-Tenochtitlan, which most sources date as 1473 (table 18, No. 3). Axayacatl also devoted considerable time to recurrent campaigns in nearby areas to the west and southwest (map 15).

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[44] To reduce this passage of Torquemada (1:157, 161) to calendar years necessitates counting the years lapsed since the ninth of the reign of Moctezuma, hence there is considerable possibility of error.

[45] There is one confusing discrepancy. The Historia de los mexicanos por sus pinturas (p. 231) places the suffocation of the Mexican ambassadors by chili fumes in the year 152 [1474]. Accordingly, the event would take place, not during the reign of Moctezuma, but during that of Axayacatl, his successor.

That there was an uprising in Cotaxtla during the reign of the latter is attested by most other sources (Códice Chimalpopoca, Anales de Tlatelolco, Codex Telleriano-Remensis, Colección de Mendoza, Torquemada, and Veytia), although Tezozomoc, Durán, and Ixtlilxochitl fail to mention Cotaxtla during the regime of Axayacatl. It is perfectly possible that Tezozomoc and Durán erroneously have attributed the chili episode to the reign of Moctezuma; yet their description is so detailed and the association with Moctezuma so convincing, that it is difficult to doubt their account.

In short, there is an impasse. In this particular case, we have chosen to follow the Crónica X sources (Tezozomoc, Durán, Códice Ramírez) in attributing two Cotaxtla wars to Moctezuma—the first prior to the Mixtecan campaign, the second, subsequent to it. Barlow (1948, pp. 22, 26) has chosen the alternative. In his description of the first Cotaxtla war, he cites Tezozomoc extensively, but ignores his implied dating. He places the campaign in 1461 or 1463; we suspect that these dates refer not to this conquest, but to the subsequent one, which follows the Mixtecan campaign.

Barlow's first Cotaxtla war falls within the reign of Moctezuma, but the second transpires 6 or 7 years after his death. As a sequel to the Cotaxtla uprising, Moctezuma decreed the death of the two rulers of Cotaxtla; but Barlow (1948, footnote 59, p. 30) has these same individuals survive until 1474, when they lead the uprising during the reign of Axayacatl. However, Tezozomoc (p. 148) attributes their deaths definitely to Moctezuma, and the Códice Ramírez (p. 180) gives a detailed description: ". . . Motecuzuma . . . mandó fuesen degollados, por detrás cortadas sus cabezas y no por la garganta, y que fuesen a ejecutar esta justicia dos oidores del consejo supremo, y así ellos mismos los degollaban con unas espadas de navaja. . . ."

[46] As a general thing, the Totonac seem to have been unable to offer effective resistance; that northern Totonacapan preserved its independence probably meant that the Triple Alliance was not interested in conquering it at that time. However, a somewhat obscure statement indicates offensive warfare by unidentified groups of Totonac and Huastecans, in 1467, toward the end of the reign of Moctezuma I:

"1 *acatl* . . . A este tiempo vinieron todos los totonacas y los cuextecas, que andan desnudos, sin bragas; vinieron a pelear en Tzompanco. Ahí por primera vez vinieron a mostrar su estandarte blanco, que los guió hacia acá y que venía siendo su enseña. Finalmente, los llevaron de vencida, y fué a aplacarse la guerra en Otompan y Papahuacan" (Códice Chimalpopoca, p. 54). See also footnote 5, map 14.)

[47] Several sources place the death of Moctezuma I in 1468; the Códice Chimalpopoca (p. 55) reports his death at the end of that year; but the Colección de Mendoza (5:46–47), the Historia de los mexicanos por sus pinturas (p. 231), and Ixtlilxochitl (2:230) give 1469. Veytia (2:221), whose chronology appears frequently to lag, places it in 1464.

The terminal date for the reign of Axayacatl generally appears as 1481, although the Codex Telleriano-Remensis gives 1483.

Table 18.—*The dated wars of Axayacatl (1469–81)*[a]

Key No. map 15	Pueblo	Códice Chimalpopoca	Anales de Tlatelolco	Historia de los mexicanos por sus pinturas	Codex Telleriano-Remensis	Torquemada	Códice en Cruz	Other sources
1	Tlatlauquitepec [1]	3 calli [1469] (p. 55)	—	—	—	—	—	—
2	Cuaxoxoca [2]	4 tochtli [1470] (p. 55)	—	—	—	—	—	—
3	Tlatelolco [3]	7 calli [1473] (p. 55)	7 calli [1473] (pp. 17, 59)	*año* 151 [1473] (p. 231)	7 *casas* [calli] 1473 (5: 151)	[1474] (1: 173, 177)	7 calli 1473 (pp. 59, 60, 145)	Ixtlilxochitl 1463[b] (2: 251–252)
4	Huexotla [4, 35]	8 tochtli [1474] (p. 56)	—	—	—	—	8 tochtli 1474 (pp. 61, 145)	—
5	Matlatzincas [5, 22, 35]	8 tochtli [1474] 12 tochtli [1478] (pp. 56, 57)	9 acatl [1475] (p. 59)	*año* 155 [1477] (p. 231)	6 *navajas* [tecpatl] 1472 (5: 151)	[1472] [1475] (1: 181–182)		—
6	Ocuilan [22]	10 tecpatl [1476] (p. 56)	10 tecpatl [1476] (p. 59)	—	11 *navajas* [tecpatl] 1476 (5: 151)	[1474] (1: 181)	—	—
7	Cuernavaca [6]		—	—	—	—	—	—
8	Pochote [7]	11 calli [1477] (p. 56)	—	—	—	—	—	—
9	Jiquipilco	12 tochtli [1478] (p. 57)	—	—	12 *conejos* [tochtli] 1478 (5: 152)	[1474] (1: 181)	12 tochtli 1478 (pp. 62–64)	—
10	Toluca	—	—	—	6 *navajas* [tecpatl] 1472 (5: 151)	[1475] (1: 182)	—	—
11	Zinacantepec	—	—	—	—	[1472] (1: 181)	—	—
12	Tlacotepec	—	—	—	—	[1475] (1: 182)	—	—
33	Totutla	—	—	—	—		—	—
34	Cotaxtla [18, 35]	—	—	*año* 153 [1475] (p. 231)	10 *cañas* [acatl] 1475 (5: 151)	[1472] (1: 176)	9 acatl 1475 (pp. 62, 145)	—
39	Tuxpan	—	—	—	—	[1475] (1: 182)	—	—
50	Tehuantepec	—	—	—	—	[1469] (1: 172)	—	—
51	Huatulco	—	—	—	—		—	—
52	Huejotzingo [26]	—	—	—	—		—	Veytia 1468 (2: 223)
53	Atlixco [26]	—	—	—	—		—	—
54	Suchixtepec [27]	—	—	—	—	[1472] (1: 176)	—	—
55	"Malacatepec"	—	—	—	—	[1474] (1: 181)	—	—
56	Coatepec [28]	—	—	—	—		—	—

[a] See the first two paragraphs of footnote a, table 16. Dubious conquest or doubtful pueblo identification is discussed in the notes which accompany map 15; numbered notes in the table refer to the comments appended to that map. Brackets apply only to the column in which they are placed.

[b] Apparently through error, the date is given as 1463 instead of 1473 (cf. Ixtlilxochitl, ftn. 2, 2: 252).

The Gulf coast was not neglected, for Moctezuma's conquests in that area were far from secure.[48] It was decided to invite the "new vassals" of "Cempoala" and "Quiahuixtlan" to an important ceremony, with the understanding that if they declined, a reconquest was indicated (Tezozomoc, p. 216). Prudently, they responded with alacrity and war was averted.

But just to the south, Cotaxtla revolted once more, in 1475 (table 18, No. 34; map 15, No. 34). To the north, a new uprising broke out in the Huasteca. There are few details concerning the latter; Torquemada (1:182) states merely that "certain Mexican and Texcocan merchants" were murdered in Tuxpan and that war followed. He places this episode after his second war in the Matlatzinca area, and, as nearly as can be told, his date would be roughly 1475. In any case, the campaign seems to have come late in the reign; at least the Huastecan pueblos appear at the end of the lists of conquests (Códice Chimalpopoca, p. 67; Anales de Tlatelolco, p. 17; Colección de Mendoza 5:46). A date somewhere between 1475 and 1480 cannot be far wrong.

Tuxpan (map 15, No. 39), was not the only Huastecan pueblo subjugated at this time, and at least two others, also on the frontier of northern Totonacapan, succumbed. These are Zapotitlán (map 15, No. 37), in the vicinity of Temapache, and "Micquetlan," presumably modern Mequetla (map 15, No. 38), on a tributary of the Río Tuxpan. Moreover, the "Tenexticpac," conquered by Axayacatl, suggests modern Tenixtepec, near Papantla. However, we are relatively sure that the conquered pueblo lay considerably farther north and is to be identified with a now extinct Huastecan settlement (map 15, No. 40).[49]

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[48] In fact, they were so uncertain that Durán (1:281) even speaks of "cempualtecas y quiauiztecas, dos prouincias que residen junto á la costa, las quales hasta entonces no se auian conquistado . . ."

Skirmishes so close to Papantla must have had reverberations in northern Totonacapan, yet there is no mention of the conquest of any Totonac pueblo.

TIZOC (1481–86)[50]

Following the death of Axayacatl, the brief rule of Tizoc ensued. As usual, with the change of rulers, a new military campaign was contemplated; some wished to attack Michoacán; others suggested "the coasts of Cotaxtla," apparently once more in open revolt (Tezozomoc, p. 249). Reputed Texcocan conquests during the first year of the reign of Tizoc probably refer to the quashing of this rebellion by the Triple Alliance.[51]

As a military leader, Tizoc was not conspicuously successful. Sahagún (2:280) states flatly that no wars took place during his regime, but a respectable list of conquests is attributed to him by other sources (Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza). So few of these are dated that no table has been prepared; the dates we have are mentioned in the text.

The activities of Tizoc evidently were widely scattered (map 16), and some of his conquests are not identifiable (footnotes to map 16). However, he seems to have been moderately active west of the Valley of Mexico. He reconquered Toluca (map 16, No. 21) (Colección de Mendoza 5:47) and, in the year 5 *navajas* [tecpatl], or 1484,[52] suppressed a rebellion in Zinacantepec (map 16, No. 24) (Codex Telleriano-Remensis 5:152). "Çillan, Matlatzinco, Maçatépec," or "Mazauacan" (Códice Chimalpopoca, p. 67; Anales de Tlatelolco, p. 17) all refer to campaigns in the Toluca zone. Under the circumstances, it seems likely that the Tlacotepec (map 16, No. 25) conquered by Tizoc (Torquemada 1:182) was the pueblo of that name near Toluca—the same Tlacotepec conquered previously by Axayacatl (Torquemada 1:182), and not one of the better-known pueblos of that name (of which there is one in Puebla, one in Oaxaca, and another in Guerrero).

In part, the efforts of Tizoc were expended on war with Metztitlán (map 16, No. 26) and the adjacent Huasteca. Dibble (Códice en Cruz, p. 65) places this campaign early in the reign (2 calli [1481]). The Metztitlán hostilities are of some interest to us because the Huastec, immediate neighbors of the Totonac, fought against the Triple Alliance (Tezozomoc, p. 251).[53] They were more directly involved in the conquest of Tlatlacxoquico (map 16, No. 18), in what must have been the reconquest of Mequetla (map 16, No. 10), Temapache (No. 9), and "Occentépetl" (No. 17). Again, these skirmishes in the Huasteca should have been felt in adjacent Totonacapan, yet there is no indication of the conquest of the latter. As far as we can tell, Papantla and the surrounding Totonac settlements still were independent of Mexican rule.

AHUIZOTL (1486–1502) [54]

In 1486, Tizoc died and was succeeded by Ahuizotl. Under him, the Triple Alliance not only reconquered many pueblos, but pushed into new and distant fields, extending its conquests as far south as the modern borders of Guatemala.

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[49] During the sixteenth century, there appear to have been two settlements on the Totonacapan-Huastecan border with very similar names:

a. "Tenuxtepeque," an *estancia* of Papantla, held in *encomienda*, in the midsixteenth century, by Andrés de Tapia (Suma, No. 449). This, we believe, has survived in modern Tenixtepec, on the coast, just southeast of Papantla, and within the present municipal unit of the latter name.

b. "Temyztiquipac," "Tenexticpac," "Tenestequipaque" or "Tenesquipaque," a *cabecera* held by Juan de Villagómez (Icaza, No. 411: Doctrinas, p. 219; Epistolario 9:31; García Pimentel, 1904, p. 179).

During the sixteenth century, this pueblo spoke both Mexicano and Huasteco (Doctrinas, p. 219). It no longer exists, but it must have been situated well to the north of Papantla, for it was bounded by Tamiahua (Suma, No. 530) and "Tzicoac" (Chicontepec; see footnote 33, p. 267) (Suma, No. 135). Moreover, since part of its tribute was paid in fish, the pueblo must have been either on the coast or near a river (Epistolario 9:31). We have located it (map 15, No. 40) near the coast, in a line between Tamiahua and Chicontepec, since the holdings of Villagómez are said to have been in this zone (Epistolario 14:75).

Obviously, both speech and location identify this extinct pueblo as Huastecan; presumably it, and not Tenixtepec, of Papantla, was that conquered by Axayacatl. However, Barlow (1947 a, map 4), identifies the conquest with the Papantla Tenixtepec, hence his map indicates penetration of northern Totonacapan. Cook and Simpson (p. 203 and No. 549 of map) also have made the same identification, which we believe to be erroneous.

[50] The Colección de Mendoza (5:47–49) gives the above dates; other sources start the reign in 1482 and 1483, and end it in 1485.

[51] The Códice en Cruz (pp. 67, 146) indicates that Netzahualpilli, of Texcoco, conquered Orizaba in 1481; and Ixtlilxochitl (2:262–263) attributes the conquest of Orizaba, Totutla, Oxtotipan, and "other provinces of the Gulf" to him in this year.

[52] In this same year, Tizoc subdued the rebellious "Chicpantlaca" (Anales de Tlatelolco, p. 59).

[53] By the end of the sixteenth century, "Tzicoac" and Metztitlán were not allies, but traditional enemies (Relación de Metztitlán).

[54] The Colección de Mendoza (5:49–51) gives the above dates. According to Anales de Tlatelolco (p. 17), Ahuizotl was not installed as ruler until 2 years after the death of his predecessor. The Códice Chimalpopoca (p. 59) has him rule until 1503.

The chronology of Ahuizotl's conquests is complicated (table 19), owing in part to the disperse character of his campaigns and in part to deficiencies and contradictions in the sources. From the start, there is disagreement concerning the sequence of his initial campaigns, which appear to have been extraordinarily scattered. The accounts of Tezozomoc and Torquemada begin with what apparently was a major campaign in the Mazahua country just west of the Valley of Mexico; but the Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza are strangely silent concerning military activities in the west, unless their conquest of "chiapanecas" be so interpreted. This word is particularly confusing, for apart from Chapa de Mota (map 17, No. 5), Ahuizotl conquered far to the south, in the modern State of Chiapas, and the term might apply to either area. However, except for Ixtlilxochitl (2:271), the sources place the majority of his conquests in the south subsequent to 1495.

The ghost of the Huasteca was difficult to lay, and during the early years of his reign, Ahuizotl bore down on this zone (table 19, Nos. 3, 58), and toward the end of his rule, there was a flurry on the borders of the Huasteca, when a rebellion in Huejutla (table 19, No. 64) was quashed. Presumably as a byproduct of one of the northeasterly campaigns, Totonac "Tuzapan" (map 17, No. 71) was conquered.

Although Mexican sources mention only this one Totonac pueblo, two Texcocan authorities (Códice en Cruz, pp. 70, 146; Ixtlilxochitl 2:271) report military action farther south on the Gulf coast. Both mention the conquest, in 1486, of the Totonac pueblo of Nautla. As usual, they claim this victory for their own people, for which reason Nautla does not appear on map 17. Nevertheless, it seems likely that the Triple Alliance was involved. Ixtlilxochitl boasts that the principal citizens of Nautla, including the ruler, were captured, and that the entire Gulf coast, from Nautla to Pánuco, thereby came under the control of Texcoco. This is not a particularly convincing claim, for in the days of Moctezuma II, Nautla was in Mexican hands (Díaz del Castillo 1:343).

Farther south, the pueblo of "Mictlanquauhtla" (map 17, No. 4) fell the same year (table 19, No. 4). This conquest, and the preceding one, suggest fairly extensive military action along the Gulf coast, although other than "Tuzapan" and Nautla, no Totonac pueblos are mentioned.

Through a series of conquests in modern Puebla, Veracruz, and Oaxaca, the way was prepared for an attack on the Isthmus of Tehuantepec; most military action in the latter zone apparently took place in the course of the middle or late 1490's. Torquemada (1:192) alone has Ahuizotl penetrate beyond the Isthmus, into modern Guatemala, during the latter years of his reign; he does not, however, claim conquest of that area.

Ahuizotl had a sizable series of victories to his credit in the Balsas Basin and in coastal Guerrero. For the most part, these are undated. Tlapa, in Guerrero (table 19, No. 2), was among the early conquests.[55] We have no precise date for the conquest of Zacatula, but Ixtlilxochitl (2:274–283), who claims it as a Texcocan victory, has it sandwiched between events which took place in 1489 and 1492. "Cultepec, where the mines now are" (Codex Telleriano-Remensis 5:153), presumably refers to the famous mining center not far from Taxco; it fell in 1496 or shortly thereafter (table 19, No. 56). Tezozomoc (pp. 340–343) places the conquest of towns in the Balsas following the early victories in the Huasteca and preceding the wars in the Oaxaca-Tehuantepec zone; neither he nor Torquemada mentions the coast of Guerrero. As far as we can tell, the conquests in this area were scattered over a considerable period of time.

The success of Ahuizotl as a military leader is undeniable, yet his campaigns were characterized by their diffuse nature. Instead of mopping up systematically, zone by zone, he apparently maintained a large series of dispersed war parties in the field concurrently. Our impression is one not of an empire builder (Barlow, 1947 a, p. 221), but of a vigorous and effective looter, whose raids were widespread and spotty, both in time and in place.

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[55] The "Tlacupan" of Torquemada (1:186) presumably is Tlapa. The Códice Chimalpopoca (p. 58), the Códice en Cruz (pp. 70–71, 146), and Ixtlilxochitl (2:273) mention Tlapanecas among the captives sacrificed in 1487.

TABLE 19.—*The dated wars of Ahuizotl (1486–1502)* [a]

Key No., map 17	Pueblo	Códice Chimalpopoca	Anales de Tlatelolco	Codex Telleriano-Remensis	Torquemada	Códice en Cruz	Ixtlilxochitl
1	Cuautenango [1]	7 tochtli [1486] 9 tecpatl [1488] (pp. 57, 58)	10 calli [1489] (p. 60)	9 *navajas* [tecpatl] 1488 (5:152)	[1489] (1:186, 187)		
2	Tlapa [1, 28]	7 tochtli [1486] (p. 57)			[1486]–[1487] (1:186) [b]		1486 (2:271)
3	Chicontepec [1, 27]	7 tochtli [1486] 9 tecpatl [1488] (pp. 57, 58)	8 acatl [1487] (p. 60)		[1486]–[1487] (1:186) [b]	8 acatl 1487 (p. 70)	1486 (2:272)
4	"Mictlanquauhtla" [1, 2]	7 tochtli [1486] (p. 57)					
5	Chapa de Mota [1]	9 tecpatl [1488] (p. 58)	11 tochtli [1490] (p. 60)	9 *navajas* [tecpatl] 1488 (5: 152)			
6	Jico [1, 25]	13 tecpatl [1492] (p. 58)		1 *casa* [calli] 1493 (5:153)			
7	Cuicatlán [1, 18]	1 calli [1493] (p. 58)					
8	Jaltepec [1]	1 calli [1493] 8 tecpatl [1500] (p. 58)			ca. [1500]–[1502] (1:193) [c]		1493 1500 (2:283, 289)
9	Tiltepec [2]	3 acatl [1495] (p. 58)					1495 (2:283)
10	Juchitán [4, 38]	4 tecpatl [1496] (p. 58)	5 calli]1497] (p. 60)				1486 1497 (2:271, 283)
11	Tehuantepec [4, 38]	} 5 calli [1497] (p. 58)	6 tochtli [1498] (p. 60)		} ca. [1497]–[1500] (1:192) [d]		1496 1499 (2:283, 289)
12	Amatitlán [4, 38]		5 calli [1497] (p. 60)				1486 1497 (2:271, 283)
14	Zaachila [39]			3 *cañas* [acatl] 1495 (5:153)		4 tecpatl 1496 (pp. 75, 146)	1492 (2:283)
30	Coyulapa		9 tecpatl [1488] (p. 60)		} [1489] (1:186, 187)		1486 (2:271)
32	"Cuetzalcuitlapillan" [12, 31]						
40	Huautla [19]				[1490] (1:187)		
41	Mezquititán [20]				[1490] (1:191)		
43	Coapiloloya				[1489] (1:186, 187)		
54	Atizapán			1 *casa* [calli] 1493 (5:153)			
55	Mitla			2 *conejos* [tochtli] 1494 (5:153)			
56	Sultepec			4 *navajas* [tecpatl] 1496 (5:153)	ca. [1497]–[1500] (1:192) [d]		
57	Mazahuas [26]				[1486]–[1487] (1:186) [b]		
58	Tuxpan [37]				[1486]–[1487] (1:186) [b]		
59	"Cuextlan" [29]				} [1489] (1:186, 187)		
60	"Chinantla" [30, 35]						1486 (2:271)
61	Quimixtlán				ca. [1490] (1:191)		
62	Atlixco [32]				[1497] (1:191)	2 tochtli 1494 7 acatl 1499 (pp. 74, 79)	1486 (2:272)
63	Tlacolula				} ca. [1500]–[1502] (1:193) [c]		
64	Huejutla						
76	Soconusco						} 1486 (2:271)
84	Yehaultepec						
85	Zapoteca [41]				[1486]–[1487] (1:186) [b]	8 acatl 1487 (p. 70)	
86	Mixteca alta [41]						
87	Mixteca baja [41]						
88	Chiapas [42]						
89	"Amextloapan" [43]						1499 (2:289)
	Nautla [40]					7 tochtli 1486 (pp. 69–70, 146)	1486 (2:271)

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[a] See first two paragraphs of footnote a, table 16. Dubious conquest or doubtful pueblo identification is discussed in the notes which accompany map 17; numbered notes in the table refer to the comments appended to that map. Braces apply only to the column in which they are placed.

[b] Torquemada lists wars with "Maçahuas" and "Tziuhcoacas [Chicontepec] y Tocpanecas," as well as with the "Tzapotecas" and those of "Tlacupan" (evidently Tlapa; see footnote 28, map 17). These campaigns must have taken place during the first two years of the reign of Ahuizotl, since the captives were sacrificed at the dedication of the temple of Huitzilopochtli, in the year 8 acatl, or 1487 (Códice Chimalpopoca, p. 58; Códice en Cruz, pp. 70–71, 146). Ixtlilxochitl (2: 273) also gives 1487, but places the inauguration of the temple in the third year of the reign.

[c] Following the inundation of Tenochtitlan and prior to the death of Ahuizotl, in 1502. The flood apparently took place in 8 tecpatl, or 1500 (Códice Chimalpopoca, p. 58 [cf. Torquemada 1: 192] Anales de Tlatelolco, p. 60; Códice en Cruz, p. 147), although the Historia de los mexicanos por sus pinturas (p. 231) gives a date which we calculate at 1498.

[d] Following the twelfth year of the reign (1497) and prior to the flood mentioned in the preceding note.

MOCTEZUMA II (1502–20)

Moctezuma, the younger, succeeded Ahuizotl in 1502 [56] and, until interrupted by the arrival of the Spaniards, continued the program of expansion southward. His activities were, in part, concentrated in Oaxaca and adjacent areas, although he pushed farther south, in the steps of Ahuizotl, to reconquer Soconusco (Colección de Mendoza 5:50). It is claimed somewhat dubiously that, late in the reign, he penetrated Guatemala and Nicaragua (Torquemada 1:218–219).

A considerable part of his time was devoted to intermittent wars with Tlaxcala, and a major uprising in the Mixteca and adjacent zones likewise kept him occupied (table 20). It is evident that the bulk of the previous conquests to the south was precarious; Cotaxtla, for example, received his ambassadors with ill will, but Moctezuma apparently had no time for reprisal (Torquemada 1:214).

He made few conquests in the far north, and the Huasteca appears to have enjoyed a well-deserved respite. Isolated campaigns were directed toward that general area, but there is no suggestion of large-scale operations (map 18).

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[56] Sources agree on the above dates, except for the Códice Chimalpopoca (p. 59), which places the death of Ahuizotl in the year 11 acatl, or 1503.

TABLE 20.—*The dated wars of Moctezuma II (1502–20)*[a]

Key No., map 18	Pueblo	Códice Chimalpopoca	Anales de Tlatelolco	Historia de los mexicanos por sus pinturas	Codex Telleriano-Remensis	Torquemada	Códice en Cruz	Ixtlilxochitl
1	"Teotepec" [1, 2, 29]	2 acatl [1507] (p. 60)	2 acatl [1507] (p. 61)			[1507] (1: 210)		
2	Ixtlán [1]					[1506] (1: 208, 210)		
3	Huejotzingo [3]	2 acatl [1507] 3 tecpatl [1508] (p. 60)	10 acatl [1515] 12 calli [1517] (pp. 61–62)			[1509] [1510] (1: 211, 213)		
4	Atlixco [3]	2 acatl [1507] (p. 60)				[1502] [1507] [1510] (1: 195, 210, 213)		1508 (2: 304)
5	Tenango [3, 4]							
6	Ixpantecpec [5, 29, 51]	5 tochtli [1510] (pp. 60–61)	5 tochtli [1510] (p. 61)		6 *cañas* 1511 [acatl] (5: 154)	[1510] [1511] (1: 213–214)	5 tochtli 1510 (p. 105, 147)	1509 (2:310)
7	Suchiltepec [5]					[1511] (1: 214)		
8	Tlaxiaco [5, 50]	6 acatl [1511] (p. 61)				[1503] [1511] (1: 196–197, 215)	11 acatl 1503 (pp. 84–85, 147)	
9	Quimixtlán [5]	7 tecpatl [1512] (p. 61)						
10	"Iztactlallocan" [5, 6, 29]	9 tochtli [1514] (p. 61)	10 acatl [1515] (p. 61)		10 *cañas* 1515 [acatl] (5: 155)	[1514] (1: 215–216)		
11	Ocotlán [5]							
12	Zenzontepec [5]	10 acatl [1515] (p. 61)				[1516] (1: 228)		
12a	"Texoquauhtli" [6a]	12 calli [1517] (p. 63)						
13	Achiutla [29]		12 tecpatl [1504] (p. 61)			[1503] (1: 196–197)		
14	Sosola [29]		13 calli [1505] (p. 61)	*año* 184 [1506] (p. 231)	4 *casas* 1509 [calli] (5: 154)	[1506] (1: 207–209)		1506 (2: 309)
16	Tututepec [49]				8 *casas* 1513 [calli] (5: 154)	[1506] (1: 208)	8 calli 1513 (p. 106)	1507 (2: 309)
33	Nopala				7 *navajas* 1512 [tecpatl] (5: 154)	[1512] (1: 215)		
37	Caltepec						11 acatl 1503 (pp. 84–85, 147)	
39	Tlayehualancingo [11, 25, 33]				9 *conejos* 1514 [tochtli) (5: 155)			
41	Malinaltepec					[1503] [1510] (1: 196–197, 213)		
42	Mixtepec				7 *navajas* 1512 [tecpatl] (5: 154)			
43	Quetzaltepec [44, 49]					(1: 215–216) [1514]	8 calli 1513 (p. 106)	
44	Ixtlahuaca [13, 27, 29]		9 tochtli [1514] (p. 61)					

See footnote at end of table.

TABLE 20.—*The dated wars of Moctezuma II (1502–20)*[a]—Continued

Key No., map 18	Pueblo	Códice Chimalpopoca	Anales de Tlatelolco	Historia de los mexicanos por sus pinturas	Codex Telleriano-Remensis	Torquemada	Códice en Cruz	Ixtlilxochitl
45	Zacatepec [14]					[1517]–[1519] (1: 228)		
47	Jaltianguis						11 acatl 1503 (pp. 84–85, 147)	1516 (2: 333)
49	Ixcuintepec					[1506] (1: 210)		
52	Sola					[1508] (1: 211)		
55	Amatlán [29]		4 calli [1509] (p. 61)					
63	"Tózac" [30]		7 tecpatl [1512] (p. 61)					
64	Huilotepec [49]						3 tecpatl 1508 (pp. 104, 147)	
73	Mitla					[1508] (1: 211)		
92	Mixteca [40]				2 *cañas* 1507 [acatl] (5: 154)	[1506] (1: 207)		
94	Huautla					[1505] [1506] (1: 203–204, 208)		
95	Tehuantepec					[1506] }(1: 207)		
96	Coixtlahuaca							
97	"Yopitzingo" [43]					[1506] [1512] (1: 209, 215)		
98	Huaquechula					[1508] (1: 211)		
99	Amatitlán					[1509] (1: 211)		1514 (2: 319)
100	Juchitán					[1510] (1: 213)		
101	Cuetzalapan					[1513] (1: 215)		
102	"Cihua" [43]					[1514] (1: 215)		
106	"Maçatzintla" [47]					[1517]–[1519] (1: 228)		
110	"Tamoanchan" [49, 50]						12 tecpatl 1504 (p. 85)	

[a] See the first two paragraphs of footnote a, table 16. Dubious conquest or doubtful pueblo identification is discussed in the notes which accompany map 18; numbered notes in the table refer to the comments appended to that map. Braces apply only to the column in which they are placed.

Mexican sources make scant mention of Totonacapan at this time. "Jicotepec" (map 18, No. 28), modern Villa Juárez, was conquered. On the main route to Papantla and the Huasteca, it was an ancient conquest of Texcoco (p. 22), and during the sixteenth century was in part Totonac. Other than this, Mexican sources report the subjugation of only three Totonac pueblos: Pantepec (map 18, No. 70), on the northern limits of the zone;[57] and Pancoac and Tlayehualancingo (map 18, Nos. 38, 39).

However, various sixteenth-century *relaciones geográficas* indicate extensive conquests in Totonacapan during the reign of the younger Moctezuma. Several pueblos—Papantla,[58] Chapultepec and Tepetlán (map 18, Nos. 114, 115, 116), the two latter near Jalapa—claimed to have preserved their independence until this time (Paso y Troncoso 5: 110, 118). Jalapa, in part Totonac, and Ixhuacán, a nearby Mexicano pueblo (map 18, Nos. 117, 118), both reported having been conquered for the first time by Moctezuma II (Paso y Troncoso, 5: 102, 122).

Jilotepec and Coacoatzintla (map 18, Nos. 119, 121) also indicated pretty clearly that their submission to Mexico dated from this era (Paso y Troncoso 5: 106, 110). For Tlacolulan, the same situation is implied (see footnote 56, map 18). The conquest of Naolinco, Acatlán, Miahuatlán, and Colipa (map 18, Nos. 122–125) is attributed to Moctezuma (see footnote 57, map 18), and, despite some confusion, the same presumably holds for Jonotla and Ecatlán (map 18, Nos. 127, 128), two Totonac towns farther west, in the Sierra de Puebla (Paso y Troncoso 5: 128, 140).[59]

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[57] Krickeberg (p. 109) places Pantepec and Caltepec "in a region of Totonac speech." However, he locates Caltepec near Teziutlán, in modern Puebla. We find a Caltepec in the census reports of Puebla, but far to the south, near Tehuacán.

[58] ". . . tenian estos yndios antiguamente un governador puesto por *monteçuma* que los tenia en paz y que antes que *monteçuma* nasçiese ni eredase este rreyno no estauan estos yndios subjetos al padre de *monteçuma* ni á otra persona y que tenian guerra con el y defendían sus tierras y peleauan con fechas [*sic*] y arcos desnudos en cueros, y que despues vinieron donde á muchos anos que ya estauan cansados de defender sus tierras é términos se dieron biamente á *monteçuma* al qual obedeçian como dicho es . . ." (Relación de Papantla).

[59] In 1581, Jonotla informants estimated that their conquest by Moctezuma had taken place about a hundred years before; and, at the same time, those of Ecatlán declared that they had been subjugated by the Mexicans 20 years prior to the coming of the Spaniards. Despite these inaccuracies in dating, the reign of the younger Moctezuma presumably is indicated.

Of other Totonac settlements—Almolonga, Misantla, Hueytlalpan, "Matlatlan," Chila, and Jojupango—we know that they were tributaries of Moctezuma (Paso y Troncoso 5:119; *relaciones geográficas* of Misantla, Hueytlalpan, "Matlatlan" y Chila, and Jojupango). Since they do not appear among previous conquests, we infer that they were subjugated in the days of Moctezuma II; accordingly, they have been included in map 18 (Nos. 126, 129, 130–133).

A few pueblos in this same general area—Totonac and Mexicano alike—apparently preserved their independence. Zacatlán, in the Sierra de Puebla, proudly declared that it was free, but that from time to time it voluntarily bestowed gifts on Moctezuma (Relación de Zacatlán).[60] Tuzamapan and Ayotoxco, Totonac towns near Jonotla, apparently escaped the Mexican yoke entirely (Paso y Troncoso 5:133, 137); and Tetela and Totutla, both Mexicano settlements in the Sierra de Puebla, made no mention of a conquest by the Mexica (Paso y Troncoso 5:147, 168).

Despite the fact that the Mexican sources pay scant attention to campaigns in Totonacapan, it is evident from the above that a good many conquests were made in this area at this time; in fact, as far as we can determine, it was during the reign of the second Moctezuma that most of northern Totonacapan was subjugated. In part, the penetration was peaceful; for example, Tlacolulan, near Jalapa, stated that when tribute was requested the demand was met, apparently without bloodshed (Paso y Troncoso 5:108).

But other Totonac towns did not fare as easily. Papantla described a long and exhausting struggle. It, as well as Hueytlalpan, Jojupango, "Matlatlan" and Chila, had Mexican governors imposed—a clear indication of military conquest.[61] In addition, Moctezuma maintained garrisons "and many arms" in at least two pueblos of Totonacapan: Acatlán, north of Jalapa, and Nautla, on the coast (Paso y Troncoso 5:113, Díaz del Castillo 1:343). There are other indications, too, of conquest by violence. The little Totonac town of Chiltoyac, near Jalapa, attributed its depleted population to "war with Montesoma" and to epidemics (Paso y Troncoso 5:119).

SUMMARY

We have reviewed the conquests of the Mexicans, ruler by ruler, and have seen that the most important pueblos of southern Totonacapan were subjugated by the elder Moctezuma (1440–69), in the course of his Cotaxtla campaigns.

It is quite possible that even this early northern Totonacapan was beginning to feel a certain amount of pressure, owing to Mexican conquests along the borders. Through them, a wedge of Mexican influence was inserted between Totonacapan and the Huasteca (map 14, Nos. 48, 78, 79); and it is possible that several dubiously identified Mexican victories (map 14, Nos. 28–30; ftn. 36, p. 268) separated Totonacapan from her traditional Tlaxcalan allies.

Even so, northern Totonacapan apparently remained substantially inviolate until the days of Ahuizotl (1486–1502). In the first year of his rule, Nautla was conquered (by Netzahualpilli, of Texcoco, according to Texcocan sources); and at some unspecified time, a campaign was directed against "Tuzapan," in northern Totonacapan. Considerably later, during the reign of the younger Moctezuma (1502–20), most of the remaining area of northern Totonacapan came under Mexican rule. Mexican sources pay little attention to these conquests,[62] but others attribute a sizable series of campaigns in this area to Moctezuma II. By 1519, when the Spaniards appeared on the scene, virtually all of Totonacapan—both northern and southern—was, at least nominally, under Mexican control.

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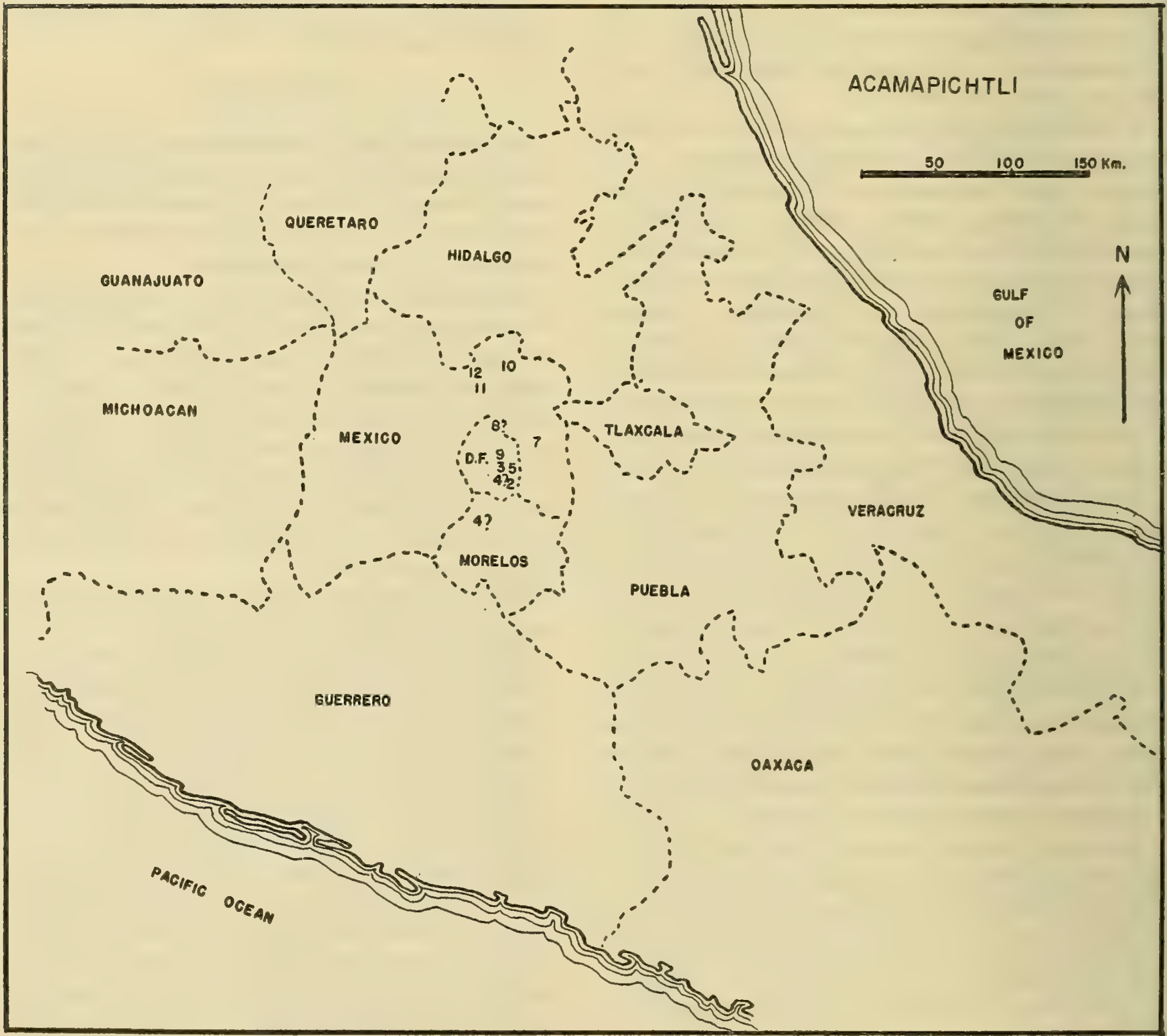
[60] See the succeeding footnote, which suggests that Zacatlán may not have been entirely free of Mexican control, in view of its gifts to Moctezuma. Torquemada (1:280) states that Zacatlán was subject to Mexico.

[61] "México tenia en su tiempo en el hacer guerra esta órden: que yendo á la guerra, al que se daba de paz no tenia sobre él tributo cierto, sino que tantas veces en el año le llevaban presente á su discrecion del que lo llevaba; pero si era poco mosábales (*sic*) mal rostro, y si mucho agradecíaselo. Y en estos no ponia mayordomo ni recaudador ni cosa: el señor se era señor. Los que tomaba de guerra decian *tequitin tlacotle,* que quiere decir, tributan como esclavos. En estos ponia mayordomos y recogedores y recaudadores; y aunque los señores mandaban su gente, eran debajo de la mano destos de México . . ." (Tapia 2:592).

[62] Partly for this reason, our conclusions are somewhat at variance with the interpretations of both Krickeberg (pp. 106–109) and Barlow (1947 a, map 4). For example, the latter shows a large block of territory, including the entire Papantla zone, as subjected by Ahuizotl. As far as we can tell, the only Totonac conquests he might possibly claim are "Tuzapan" and Nautla, the latter considerably to the south, on the coast. Moreover, although we conclude that the balance of northern Totonacapan succumbed during the reign of Moctezuma II, Barlow's map gives no indication of military action in this area during his rule.



Map 10.—Early Mexican wars: Acamapichtli (1370–96).

(For legend, see pp. 281–282)

Legend to map 10

Early Mexican wars: Acamapichtli (1370–96). In this and the legends to succeeding maps (Nos. 11–18), the data have been handled similarly. A full explanation will be given here, to avoid the necessity of repetition.

In the legends to maps 10 to 18 and in tables 16 to 20, the sources are cited in the same arbitrary sequence: Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Historia de los mexicanos por sus pinturas, Codex Telleriano-Remensis, Torquemada, Tezozomoc, Códice en Cruz, and Ixtlilxochitl. Following the latter is appended any supplementary material which has been used. Omission of one of the above sources indicates that we found in it no data pertinent to the reign under consideration.

Data concerning wars and conquests are presented in four columns. In the first is a key number, ordinarily assigned a pueblo the first time it appears on a given one of our lists. If it is possible to locate the town, the corresponding number is entered on the map. Each map, incidentally has a separate set of numbers; for example, No. 2 of the present map and of succeeding ones applies to quite different settlements.

When a given pueblo appears in sources cited subsequently in our same list, reference is made merely to key number. Thus, in the present case, the Códice Chimalpopoca gives Xochimilco as a conquest of Acamapichtli. It is third on the list below and is so numbered. The Anales de Tlatelolco speak of the subjection of the Xochimilca, obviously the people of Xochimilco. Accordingly, the identification is not repeated in the legend, but reference is made to No. 3.

The second column lists wars and conquests, as they appear in individual sources, with the orthography of the latter retained. The listing is in precisely the same order as in the respective sources, since relative position in a series sometimes is a useful clue to identification.

The third column gives the page reference; to avoid repetition, towns mentioned on the same page are grouped by brackets; the latter apply only to this column.

In the fourth and last column is given the suggested identification. When a pueblo has been identified with a still existent town, the name is given as it appears in the 1930 Federal census. For extinct pueblos, the old spelling is retained, and the name is in quotation marks. A blank in the fourth column means that we are unable to offer an identification; in such case, a discussion of the problem will be found in the numbered notes at the end of the legend.

The notes also discuss doubtful conquest. If a pueblo appears on one of our lists, unaccompanied by a note, it may be assumed that the source cited indicates clearly that the pueblo in question was a Mexican conquest.

For the early Mexican wars (maps 10–12), we have not attempted to prepare chronological tables. The latter start with Itzcoatl (map 13, table 16) and cover each subsequent reign, save that of Tizoc, whose campaigns are largely undated. When wars are reported on both map and table, as in the case of Itzcoatl, the same set of key numbers is used, to facilitate cross reference.

Legend to map 10—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Códice Chimalpopoca:		
1	Cuauhtinchantlaca [1]	34	Cuautinchán, Puebla.
2	Mízquic	66	Mixquic, D. F.
3	Xochimilco		Xochimilco, D. F.
4	Cuauhnáhuac [2]		
5	Cuitláhuac		Tlahuac, D. F.
	Anales de Tlatelolco: [3]		
6	Chichimeca de Metztitlan [4]	51	
	Mizquica	52	See 2.
7	Chimalhuaque		Chimalhuacán, México.
	Xochimilca [5]		See 3.
	Quauhtinchantlaca [1]		See 1.
	Cuitlahuaca		See 5.
8	Quauácatl [6]		
	Colección de Mendoza:		
	Quauhnahuac	5: 42	See 4.
	Mizquic		See 2.
	Cuitlhuac		See 5.
	Xochimilco		See 3.
	Historia de los mexicanos por sus pinturas:		
	Suchimilco [7]	229	See 3.
	Mezquique		See 2.
	Cuitralauaca		See 5.
	Codex Telleriano-Remensis:		
9	Chuluachan [8]	5: 148	Culhuacán, D. F.
	Ixtlilxochitl:		
	Cuitlahuac [9]	2: 70	See 5.
10	Xaltocan [10]	2: 77–78	Jaltocán, México.
11	Cuauhtitlan		Cuautitlán de Romero Rubio, México.
12	Tepotzotlan		Tepotzotlán, México.
13	Mazahuacan [11]	2: 78	

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[1] At first blush, the identification may appear dubious, for Cuautinchán is far removed from the somewhat restricted zone where early Mexica operations were concentrated. However, it is fully confirmed by the Historia tolteca-chichimeca (p. 114), although the latter attributes the conquest to Tlatelolco, and the Anales de Tlatelolco (p. 52) make the same implication. The Códice Chimalpopoca (p. 34) appears to credit the conquest jointly to Tlatelolco and Tenochtitlan.

[2] The obvious identification would be Cuernavaca, in modern Morelos. However, it seems more likely that the pueblo in question is now extinct but formerly was located in the southern part of the Valley of Mexico. Both possibilities, accompanied by interrogation point, appear on the map.

Under Acamapichtli, this pueblo appears as a conquest, in both the Códice Chimalpopoca and the Colección de Mendoza; under Huitzilihuitl, in the Anales de Tlatelolco. In each of these three cases, "Cuauhnahuac" is mentioned in company with Mixquic, Xochimilco, and Tlahuac. Later, during the reign of Itzcoatl, a pueblo of similar name crops up, but in such association that reference cleary is to the well-known modern settlement in Morelos.

However, the earlier references during the reigns of Acamapichtli and Huitzilihuitl, evidently do not apply to the same pueblo. That there was more than one town of that name is obvious, for the Historia tolteca-chichimeca (p. 98) mentions a "Quauhnáuac" a day's journey from "Xiquipilco." The latter evidently is Jiquipilco, in the State of Mexico, hence identification of "Quauhnáuac "with Cuernavaca of Morelos is quite out of the question.

Kirchhoff likewise has considered the identification of this pueblo. His first inclinination (1940, p. 82) is to identify it with modern Cuernavaca; but later (1947, ftn. 3, p. xxvi) he concludes that it must be sought in the Valley of Mexico, close to Chapultepec. However, on the map accompanying his later paper, Kirchhoff places "Quauhnáuac" north of the Federal District, in the vicinity of Jiquipilco and Cuautitlán, in the State of Mexico.

We agree that a location should be sought in the Valley of Mexico but are inclined to favor the southern limits of that zone, because of the consistent association of "Cuauhnáhuac" with Xochimilco, Tlahuac, and Mixquic.

On an early sixteenth-century map attributed to Alonso de Santa Cruz (Linné, 1942), the name Cuernavaca, appears immediately beside Tlahuac.

[3] Except for the Chichimecs, the Anales de Tlatelolco do not state explicitly that the pueblos in question were conquered; the expression used is "they perished" (*perecieron*). However, most of the settlements mentioned are listed as conquests in other sources, hence the implication of conquest is strong:

Mixquic: Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas.

Xochimilco: Códice Chimalpopoca, Colección de Mendoza.

Cuautinchán: see footnote 1.

Tlahuac: Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas; see note 9 below.

Chimalhuacán: not confirmed in other sources.

"Quauácatl": see footnote 6, below.

[4] Not shown on our map. The Anales de Tlatelolco refer to the defeat of a group of Chichimecs, which Ixtlilxochitl (2: 77) calls Otomís. Following the defeat, they withdrew to Metztitlán, in modern Hidalgo. Ixtlilxochitl (2: 77–78) himself states that the Mexicans participated in this war as allies of Azcapotzalco, to which they were tributary.

[5] The Anales de Tlatelolco imply that the war against Xochimilco was waged by Tlatelolco, for, at the conclusion, captives were sacrificed at the inauguration of a temple there. Nevertheless, the Códice Chimalpopoca, the Colección de Mendoza, and the Historia de los mexicanos por sus pinturas attribute this war to Mexico-Tenochtitlan.

[6] Not identified, but presumably close to the modern City of Mexico. Sahagún (3: 175) speaks of ". . . el lugar de esta laguna que llaman *Quauhacalco*, que es la fuente que viene al *Tlatilulco*"; and Ixtlilxochitl (2: 91) mentions a resort called "Quauhyacac," which was popular with Texcocan rulers. Our source is not explicit; this conquest may be attributable to Tlatelolco alone, or to Tlatelolco-Tenochtitlan jointly.

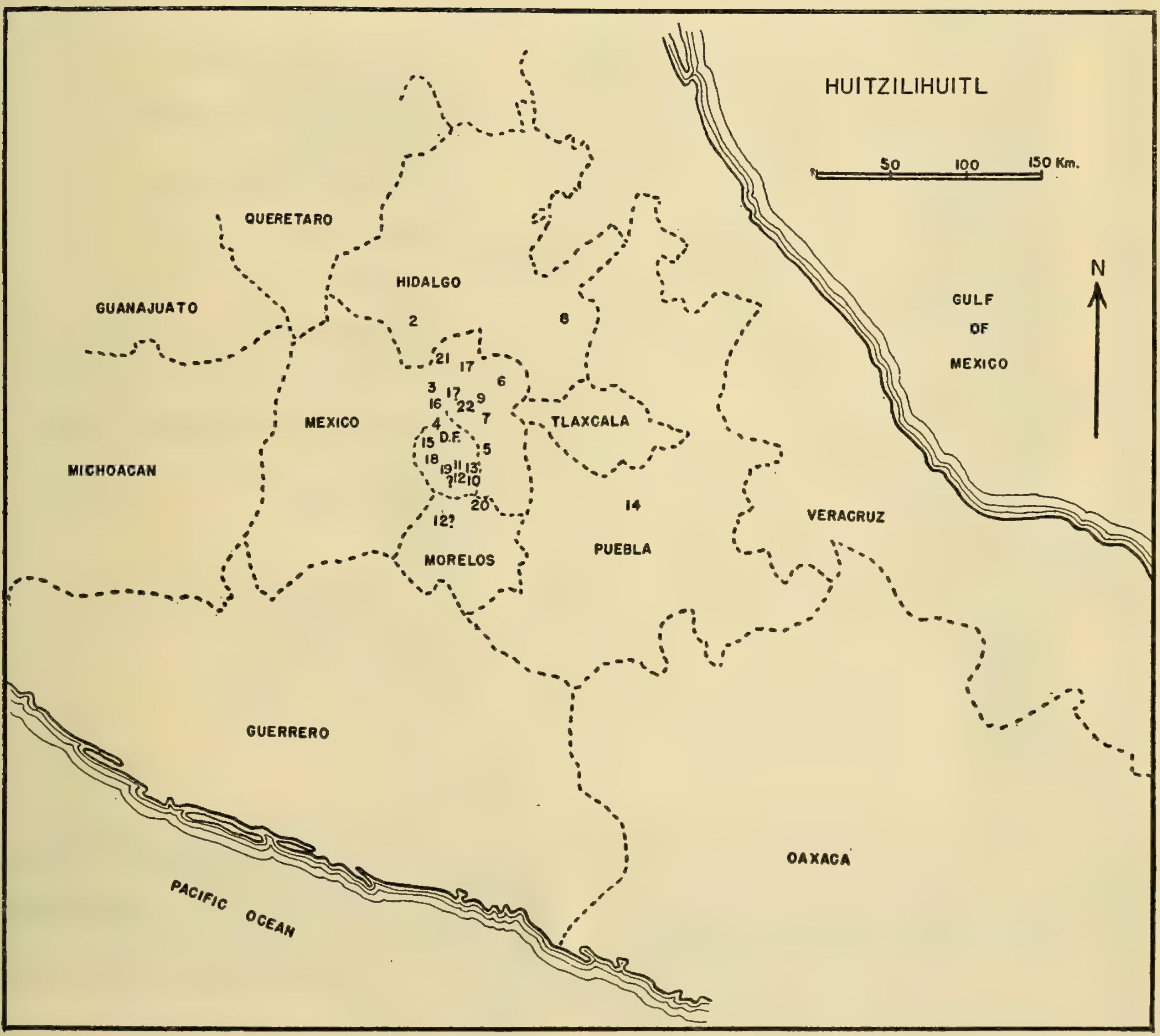
[7] Indication of conquest is not clear in the Historia de los mexicanos por sus pinturas but is confirmed by both the Códice Chimalpopoca and the Colección de Mendoza.

[8] Indication of conquest is far from clear in the Codex Telleriano-Remensis, and we do not find confirmation in other sources. The Codex suggests that the Mexicans took the city, fired the temple, but were unable to keep Culhuacán in the role of tributary. This may have been the beginning of the series of struggles between Tenochtitlan and Culhuacán.

[9] Ixtlilxochitl states that Tlahuac belonged to the Mexica but was subjected anew, following an uprising. He indicates that the war was waged by the Mexicans in their role of vassals of Azcapotzalco.

[10] According to Ixtlilxochitl, Azcapotzalco, with the assistance of Tenochtitlan, bore down on the "kingdom of the Otomís," including Jaltocán, Cuautitlan, and Tepozotlán. After their defeat, the Otomí retired to Metztitlán, and as a reward for their assistance, the Mexicans received several unspecified "pueblos and places." This war evidently is the same as that mentioned above, in footnote 4.

[11] Not shown on our map. Reference is to the territory inhabited by the Mazahua, west and northwest of the present Federal District.



Map 11.—Early Mexican wars: Huitzilihuitl (1396–1417).

(For legend, see p. 284)

Legend to map 11

Early Mexican wars: Huitzilihuitl (1396–1417). See legend to map 10.

Key No.	Source pueblo	Page	Pueblo identification
	Códice Chimalpopoca:		
1	Tepanohuayan [1]	36	
2	Tollan	66	Tula de Allende, Hidalgo.
3	Cuauhtitlan		Cuautitlán de Romero Rubio, México.
4	Azcapotzalco [2]		Azcapotzalco, D. F.
5	Chalco [3]		Tlalmanalco de Velázquez, México.
6	Otompan		Otumba, México.
7	Acolhuacan [4]		Texcoco de Mora, México.
8	Tollantzinco [5]		Tulancingo, Hidalgo.
9	Acolman		San Bartolo Acolman, México.
	Anales de Tlatelolco:		
10	Mizquícatl	15	Mixquic, D. F.
11	Xochimílcatl		Xochimilco, D. F.
12	Cuauhnauácatl [6]		
13	Cuitlauácatl		Tlahuac, D. F.
	Tepanouaya [1]	16	See 1.
14	Quauhtinchantlaca [7]	53	Cuautinchán, Puebla.
15	Coyoacan [8]		Coyoacán, D. F.
	Chalca [3]		See 5.
	Tollantzinca [5]	54	See 8.
	Colección de Mendoza:		
16	Toltitlan	5:43	Tultitlán de Mariano Escobedo, México.
	Quauhtitlan		See 3.
	Chalco		See 5.
	Tulancingo		See 8.
17	Xaltocan		Jaltocán, México.
	Otumpa		See 6.
	Tezcuco Cabda		See 7.
	Acolma		See 9.
	Historia de los mexicanos por sus pinturas:		
18	Cuaximalpan	229	Cuajimalpa, D. F.
19	Capiscla		Santa Cruz Acalpixca, D. F.
20	Cuauximilco [9]		Coajomulco, Morelos.
	Chalco [3]		See 5.
21	Tezquiaque		Tequixquiac, México.
	Tazcuco [4]		See 7.
22	Tepepan [10]		Tepexpam, México.
	Torquemada:		
	Acolhuaques [4]	1: 107	See 7.
	Ixtlilxochitl:		
	Tetzcuco [4]	2: 104	See 7.

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[1] Pueblo not identified; but in the list of conquests attributed to Itzcoatl, Ixtlilxochitl (2: 151) cites it in such manner as to suggest the location shown on our map.

Neither the Códice Chimalpopoca nor the Anales de Tlatelolco indicates definitive conquest of this town; both say merely that Mexican warriors and those of "Tepanohuayan" battled and that the latter were defeated.

[2] The inclusion of Azcapotzalco in this list of Mexican conquests is difficult to understand, since the Mexicans still were tributary to that Tepanecan center.

Possibly the source indicates merely that the Mexicans participated in a battle in Azcapotzalco, as allies—perhaps when the city was besieged by Texcoco (Ixtlilxochitl 2: 86–87). In other words, the record may be interpreted as a battle, not as a conquest. Not until the days of Itzcoatl did the Mexicans free themselves of Azcapotzalco and conquer that city.

[3] "Chalco" has been identified with modern Tlalmanalco, in accord with Torquemada (1: 116), who notes that the ancient province of "Chalco" was known to the Spaniards as Tlalmanalco, while the old name was retained by ". . . un Pueblo, que está Veras de la Laguna, que por estár en aquel lugar, se llama Chalcoatenco."

The Anales de Tlatelolco state merely that "se sublevaron los chalca," but conquest is confirmed by the Colección de Mendoza and the Historia de los mexicanos por sus pinturas.

[4] "Acolhuacan," or Texcoco (Sahagún 1: 79, 2: 285–286) appears among the conquered pueblos, since it was subdued by Azcapotzalco with the assistance of the Mexicans (Ixtlilxochitl 2: 99; Torquemada 1: 107–108). The conquest is confirmed by the Colección de Mendoza, the Historia de los mexicanos por sus pinturas, Torquemada, and Ixtlilxochitl.

Nevertheless, Ixtlilxochitl (2: 104) places the fall of Texcoco during the reign of the succeeding leader, Chimalpopoca, who received the town from the hands of the ruler of Azcapotzalco. Torquemada appears somewhat dubiously to agree; the Historia de los mexicanos por sus pinturas has Texcoco conquered both in the days of Huitzilihuitl and Chimalpopoca.

[5] Tulancingo, part of the Texcocan realm, fell into the hands of Azcapotzalco. Probably Mexican warriors participated, but Tezozomoc, the ruler of Azcapotzalco, reserved for himself the stretch of land from "the limits of 'Chalco' to those of Tulancingo" (Ixtlilxochitl 2: 103–104).

The Anales de Tlatelolco (p. 54) place the conquest of Tulancingo during the inter-regnum between Huitzilihuitl and Chimalpopoca, although in another passage (p. 16), they list Tulancingo among the conquests of Chimalpopoca, as does the Historia de los mexicanos por sus pinturas.

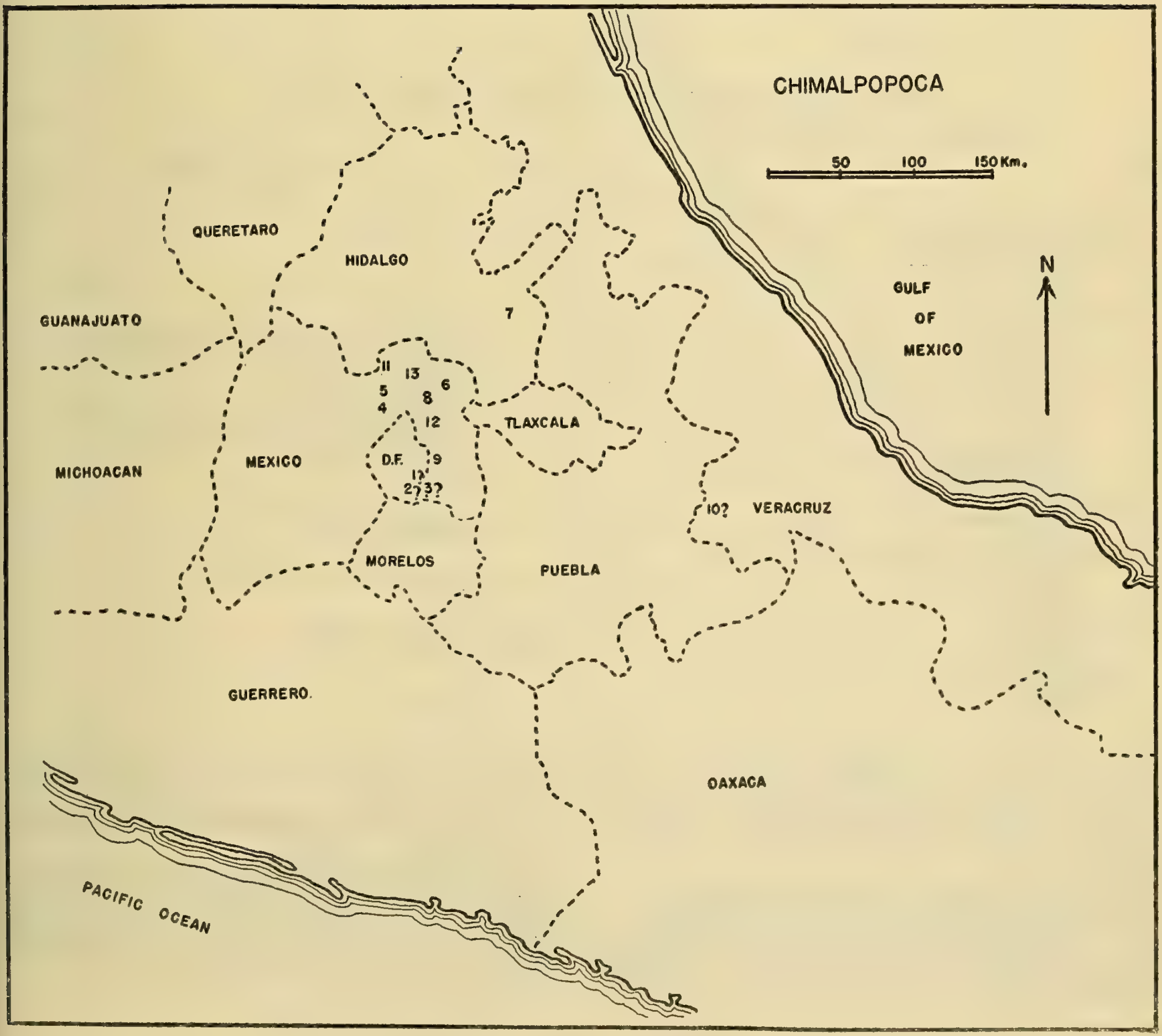
[6] See footnote 2, map 10.

[7] The Anales de Tlatelolco state merely that the inhabitants of Cuautinchán "perished." This we have interpreted as conquest, despite want o confirmation by other sources.

[8] The Anales de Tlatelolco report war, but not Mexican conquest; in fact, they remark that the Mexicans did not fare well in the encounter with Coyoacán.

[9] According to the Historia de los mexicanos por sus pinturas, Coajomulco was part of the "Chalco" domain and was conquered in the course of war with the latter pueblo (see footnote 3, above).

[10] "Tepepan," part of the Texcocan realm (Historia de los mexicanos por sus pinturas, p. 229), was the first Texcocan pueblo conquered by the Mexicans (see footnote 4, above). This pueblo could be identified with the existing pueblo of the same name in the Federal District. However, in view of the general location in which this war between Texcoco and Azcapotzalco took place, identification with Tepexpam, in the modern State of Mexico, seems more likely.



MAP 12.—Early Mexican wars: Chimalpopoca (1417–27).

(For legend, see p. 286.)

Legend to map 12

Early Mexican wars: Chimalpopoca (1417–27). See legend to map 10.

Key No.	Source pueblo	Page	Pueblo identification
	Códice Chimalpopoca:		
1	Teopancalco [1]	37	
2	Atenchicalcan [1]		
3	Tecpan [1]		
	Anales de Tlatelolco:		
4	Toltitlan	16	Tultitlán de Mariano Escobedo, México.
5	Quauhtitlan		Cuautitlán de Romero Rubio, México.
6	Otompan		Otumba, México.
7	Tollantzinco [2]		Tulancingo, Hidalgo.
8	Acolman		San Bartolo Acolman, México.
9	Chalca [3]		Tlalmanalco de Velázquez, México.
10	Auilizapaneca [4]	54	Orizaba, Veracruz.
	Toltitlancalque [5]	55	See 4.
	Collección de Mendoza:		
11	Tequixquiac	5:43	Tequixquiac, México.
	Chalco [3]		See 9.
	Historia de los mexicanos por sus pinturas:		
12	Tezcuco [6]	229	Texcoco de Mora, México.
	Tulancingo [2]		See 7.
	Torquemada:		
13	Xaltocán [7]	1:107	Jaltocán, México.
	Tetzcuco [6]	1:114	See 12.
	Códice en Cruz.[8]		
	Ixtlilxochitl:		
	Tetzcuco [6]	2:104	See 12.

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[1] These three towns were given Chimalpopoca by Tezozomoc, ruler of Azcapotzalco, probably as a reward for Mexican participation in the war with Texcoco (Códice Chimalpopoca, p. 37). Since mention is made of "los cuitlahuacas de Teopancalco, de Atenchicalcan y Tecpan, tres lugares juntos" (pp. 37, 62), we have located the pueblos near modern Tlahuac. Elsewhere (p. 51), the Códice Chimalpopoca tends to confirm such a location for "Atenchicalcan."

[2] See footnote 5, map 11.

[3] The Anales de Tlateloco suggest war followed by conquest; the Colección de Mendoza explains that "Chalco" was subdued after an uprising.

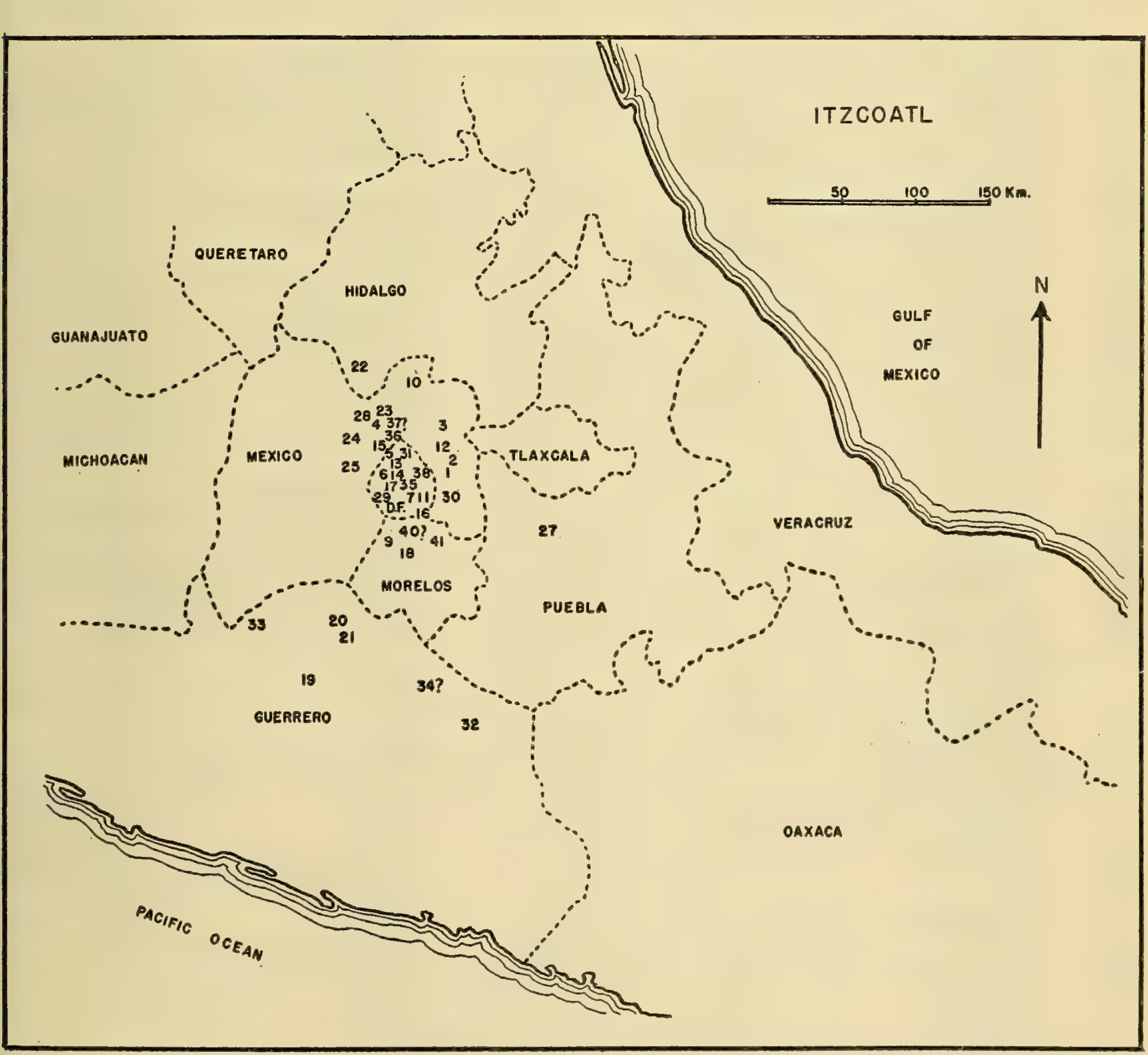
[4] Orizaba is remote from the field of action, yet no other identification seems likely. It is barely possible that Orizaba was involved in the Texcoco-Azcapotzalco war (see footnote 4, map 11), in which the Mexicans participated. Upon occasion, Orizaba and Tlaxcala collaborated as allies (p. 271), at least in theory, and we know that Tlaxcala was friendly with Texcoco (Ixtlilxochitl 2: 135; Códice Chimalpopoca, p. 46). The Anales de Tlatelolco state merely that the inhabitants of Orizaba perished—a phrase we have taken as connoting conquest, despite want of confirmation by other sources.

[5] The Anales de Tlatelolco state that those of Tultitlán perished—an expression we interpret as indicating conquest; elsewhere (p. 16), the same source confirms the conquest.

[6] See footnote 4, map 11.

[7] Torquemada (1: 107) reports a rebellion in Jaltocán, and suggests that the Mexicans, as vassals of Azcapotzalco, may have participated in its subjugation. However, this campaign under Chimalpopoca is not confirmed in other sources. Possibly, it took place during the previous reign, and the chronological confusion Torquemada displays concerning this period (see footnote 4, map 11), has led him to place it during the era of Chimalpopoca.

[8] Dibble (pp. 23–24) interprets the Códice en Cruz as recording a war between Azcapotzalco and Texcoco (see footnote 4, map 11.)



MAP 13.—Mexican wars: Itzcoatl (1427–40).

(For legend, see pp. 288–290.)

Legend to map 13

Mexican wars: Itzcoatl (1427–40). See legend to map 10.

Key No.	Source pueblo	Page	Pueblo identification
	Códice Chimalpopoca:		
1	Cohuatlychan [1]	47	San Miguel Coatlinchán, México.
2	Huexotla [1]		Huexotla, México.
3	Acolman [1]		San Bartolo Acolman, México.
4	Toltitlan [1]		Tultitlán de Mariano Escobedo, México.
5	Azcapotzalco [1]		Azcapotzalco, D. F.
6	Coyohuacan [1]		Coyoacán, D. F.
7	Xochimilco [1]		Xochimilco, D. F.
8	Tepanecas [2]	48	
9	Cuauhnahuacas [3]		Cuernavaca, Morelos.
10	Xaltocamecas [3]		Jaltocán, México.
11	Cuitlahuacas [4]	49–50	Tlahuac, D. F.
	Azcapotzalco [5]	66	See 5.
12	Acolhuacan [6]		Texcoco de Mora, México.
13	Tlacopan [6]		Tacuba, D. F.
14	Atlacuiyan		Tacubaya, D. F.
15	Teocalhuiyacan		Los Remedios, México.
16	Mízquic		Mixquic, D. F.
	Cuitláhuac		See 11.
	Xochimilco		See 7.
	Coyohuacan		See 6.
17	Mixcóhuac		Mixcoac, D. F.
	Tetzcoco		See 12.
	Cuauhnáhuac [3]		See 9.
18	Xiuhtépec		Jiutepec, Morelos.
19	Cueçallan		Cuetzala del Progreso, Guerrero.
20	Yohuallan		Iguala, Guerrero.
21	Tepequacuilco		Tepecoacuilco de Trujano, Guerrero.
22	Tollan		Tula de Allende, Hidalgo.
23	Cuauhtitlan		Cuautitlán de Romero Rubio, México.
24	Tecpan		San Miguel Tecpan, México.
25	Huizitzillapan		San Lorenzo Huitzizilapan, México.
	Anales de Tlatelolco:		
	Tecpanécatl [7]	55	See 8.
	Coyouaque [8]		See 6.
	Acolhuaque [8]		See 12.
26	Matlatzíncatl [8], [9]		
	Quauhnauácatl [3], [8]		See 9.
27	Totomiuaque [8]	56	Totimehuacán, Puebla.
	Collección de Mendoza:		
	Azcapuzala	5: 44	See 5.
	Coyuacan		See 6.
	Teocalhueyan		See 15.
28	Quaguacan		Santa María Magdalena, México, formerly "Cahuacán."
	Tlacopan		See 13.
	Atlacinhuayan		See 14.
	Mixcoac		See 17.
29	Quauximal		Cuajimalpa, D. F.
	Quauhtitlan		See 23.
	Tecpan		See 24.
	Acolhuacan		See 12.
	Mizquic		See 16.
	Cuitlahuac		See 11.
	Xodjimilco		See 7.
30	Chalco [10]		Tlalmanalco de Velázquez, México.
31	Tlatilulco [10]		Tlatelolco, D. F.
	Huizizilapa		See 25.
	Quauhnahuac [3]		See 9.
	Cuezalan		See 19.
32	Zaqualpa		Zacualpa, Guerrero.
33	Yztepec		Ixtepec, Guerrero.
	Xiuhtepec		See 18.
	Yoalan		See 20.
34	Tepequacinla [11]		Tepetlacingo, Guerrero.

See footnotes on pages 289–290.

Legend to map 13—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Historia de los mexicanos por sus pinturas:		
	Escapuzalco [12]	230	See 5.
	Tatilulco [10]		See 31.
	Guautitlán		See 23.
	Codex Telleriano-Remensis:		
	Azcapucalco	5: 149	See 5.
	Torquemada:		
	Azcaputzalco	1: 142	See 5.
	Huexotla	1: 143	See 2.
	Tlacubaya	1: 144	See 14.
	Coyohuacan	1: 145	See 6.
35	Huitzilopochco		Churubusco, D. F.
	Atlacuihuayan		See 14.
	Xuchimilco	1: 148–149	See 7.
	Cuitlahuac	1: 149	See 11.
	Quauhnahuac [3]	1: 149–150	See 9.
	Tultitlan	1: 150	See 4.
	Quauhtitlan		See 23.
	Tezozomoc:		
	Atzcaputzalco	34	See 5.
	Cuyuacan	56	See 6.
	Xochimilco	67	See 7.
	Cuitlahuac	72–73	See 11.
	Códice en Cruz:		
	Tepanecas [13]	27	See 8.
	Cuauhtitlan [13]	30	See 23.
	Ixtlilxochitl:		
	Azcaputzalco	2: 151	See 5.
	Coyohuacan		See 6.
	Tlacopan		See 13.
36	Tenayocan		San Bartolo Tenayucan, México.
37	Tepanoaya [14]		
	Toltitlan		See 4.
	Quauhtitlan		See 23.
	Xaltocan [3]		See 10.
	Huitzilopochco		See 35.
38	Colhuacan		Culhuacán, D. F.
	Tetzcuco	2: 151–152	See 12.
	Xochimilco [15]	2: 152	See 7.
	Cuitlahuac [15]		See 11.
39	Tlalhuicas [16, 17]	2: 196	
40	Tepozotlan [18]		Tepoztlán, Morelos.
41	Huaxtepec		Oaxtepec, Morelos.
	Chalco [10, 19]		See 30.
	Itzocan [19]		
	Tepecyacan [19]		
	Tecalco [19]		
	Teohuacan [19]		
	Coaixtlahuacan [19]		
	Cuetlachtlan [19]		
	Hualtepec [19]		
	Quauhtochco [19]		
	Mazahuacan [19]	2: 198	

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[1] Each of these seven towns was conquered by Netzahualcoyotl of Texcoco, in the course of the war he waged with Azcapotzalco, in order to recover his domain. Itzcoatl assisted him in this enterprise.

Of the seven pueblos, only the conquest of Azcapotzalco is not entirely clear (Códice Chimalpopoca, p. 47), although the implication is strong. However, the conquest is confirmed elsewhere (p. 66) in the same source, and by the Colección de Mendoza, the Codex Telleriano-Remensis, Torquemada, Tezozomoc, and Ixtlilxochitl.

[2] Tepaneca is the name given to the realm which reached its greatest extent under Tezozomoc and its ruin under Maxtla. Its principal pueblo was Azcapotzalco, to which the Mexicans were tributary until the days of Itzcoatl.

Although the Códice Chimalpopoca says merely that the Tepanecas were defeated, conquest of their major holdings is corroborated, inasmuch as the seven pueblos mentioned previously (see footnote 1, above) all were part of the Tepanecan "state."

[3] The Códice Chimalpopoca states that the forces of Cuernavaca and Jaltocán were defeated, and it is quite clear, moreover, that the pueblos in question were conquered. Elsewhere (p. 66), the same source confirms the conquest of Cuernavaca, which also is recorded in the Colección de Mendoza and in Torquemada; the conquest of Jaltocán is reported by Ixtlilxochitl.

In this case, identification of Cuernavaca is well confirmed. The Códice Chimalpopoca mentions it with Jiutepec, also in the modern State of Morelos, and in the Colección de Mendoza it appears in company with pueblos in the State of Guerrero. Moreover, Torquemada's account of the campaign leaves little doubt that the town known today as Cuernavaca is indicated.

According to the Códice Chimalpopoca (p. 48), Cuautitlán figured in this war as an ally of Tenochtitlan and Texcoco.

[4] The Códice Chimalpopoca reports that the Mexicans fought the "Cuitlahuacas" for 3 years without victory. However, elsewhere (p. 66), the same source lists Tlahuac among the conquered pueblos, and its subjection is con-

Legend to map 13—Continued

firmed by the Colección de Mendoza, Torquemada, and Tezozomoc. See also footnote 15, below.

[5] Before it lists the conquests of Itzcoatl, starting with Azcapotzalco, the Códice Chimalpopoca (p. 66) refers ambiguously to "Chalco," saying: "Este Itzcohuatzin otra vez se aplicó la ciudad de Chalco." It adds that Itzcoatl was responsible for the death of the ruler of Tlatelolco. Since in neither case is there definite mention of war, much less of conquest, the pueblos in question have not been included in our list.

Two sources (Colección de Mendoza, Historia de los mexicanos por sus pinturas) have Tlatelolco subjected by Itzcoatl. The same is said of "Chalco" (Colección de Mendoza, Ixtlilxochitl).

Nevertheless, it appears that "Chalco" was not definitely subdued until the reign of Moctezuma I, and Tlatelolco, until that of his successor, Axayacatl.

[6] It is not surprising to find "Acolhuacan"-Texcoco and Tacuba among the Mexican conquests—in spite of the alliance between Netzahualcoyotl and Itzcoatl, and in spite of the fact that somewhat later Tacuba was a member of the Triple Alliance.

In order for Netzahualcoyotl to recuperate his power, he and Itzcoatl found it necessary to conquer Texcoco itself, which had been in a state of rebellion since the fall of Azcapotzalco (Ixtlilxochitl 2: 151–152). This conquest is confirmed by the Colección de Mendoza, which also mentions that of Tacuba, as does Ixtlilxochitl. The latter (2: 151) would have the conquest purely formal since the ruler of Tacuba "de secreto favorecía el bando de Nezahualcoyotzin."

[7] The association of "Tecpanécatl" with the death of Maxtlatzin (Maxtla), ruler of Azcapotzalco (Anales de Tlatelolco, p. 55), indicates that "Tecpanécatl" refers to the Tepanecas (see footnote 2, above).

The source states that the "Tecpanécatl" "perished," which we interpret as conquest, and there is clear evidence of the conquest of the Tepaneca at this time (notes 1, 2, above).

[8] In these cases as well, the Anales de Tlatelolco use the expression, "they perished." Again, we interpret this as conquest, that of Coyoacán being confirmed by the Códice Chimalpopoca (pp. 47, 66), the Colección de Mendoza, Torquemada, Tezozomoc, and Ixtlilxochitl. The subjection of pueblos in the Matlatzinca area is reported in the Códice Chimalpopoca and the Colección de Mendoza. With respect to Cuernavaca, see footnote 3 above; and Texcoco footnote 6.

The supposed conquest of Totimehuacán appears not to be confirmed.

[9] The people known as Matlatzinca are found today in the vicinity of the Valley of Toluca, and thence south and west approximately to the modern limits between Mexico and Morelos, Guerrero and Michoacán. Since a province rather than a pueblo is involved, No. 26 is not shown on our map.

[10] See footnote 5, above.

[11] The name, "Tepequacinla," is somewhat reminiscent of that of a town of northeast Guerrero, with which we hesitantly have identified the conquest. It is situated, incidentally, in a zone where Itzcoatl was particularly active.

[12] The Historia de los mexicanos por sus pinturas mentions a war between Mexico and Azcapotzalco. The date (table 16), suggests that the hostilities are those mentioned above, in footnotes 1 and 2.

[13] Dibble's interpretation (pp. 27, 30–31) of the Códice en Cruz is dubious, being based on evidence from other sources.

[14] Not identified; the sequence of pueblos suggests a location between Tenayucan and Tultitlán.

[15] According to Ixtlilxochitl, Netzahualcoyotl and Itzcoatl gave orders to reduce these two pueblos. The conquest of Tlahuac is reported elsewhere (see footnote 4, above), as is that of Xochimilco (Códice Chimalpopoca, Colección de Mendoza, Torquemada, Tezozomoc).

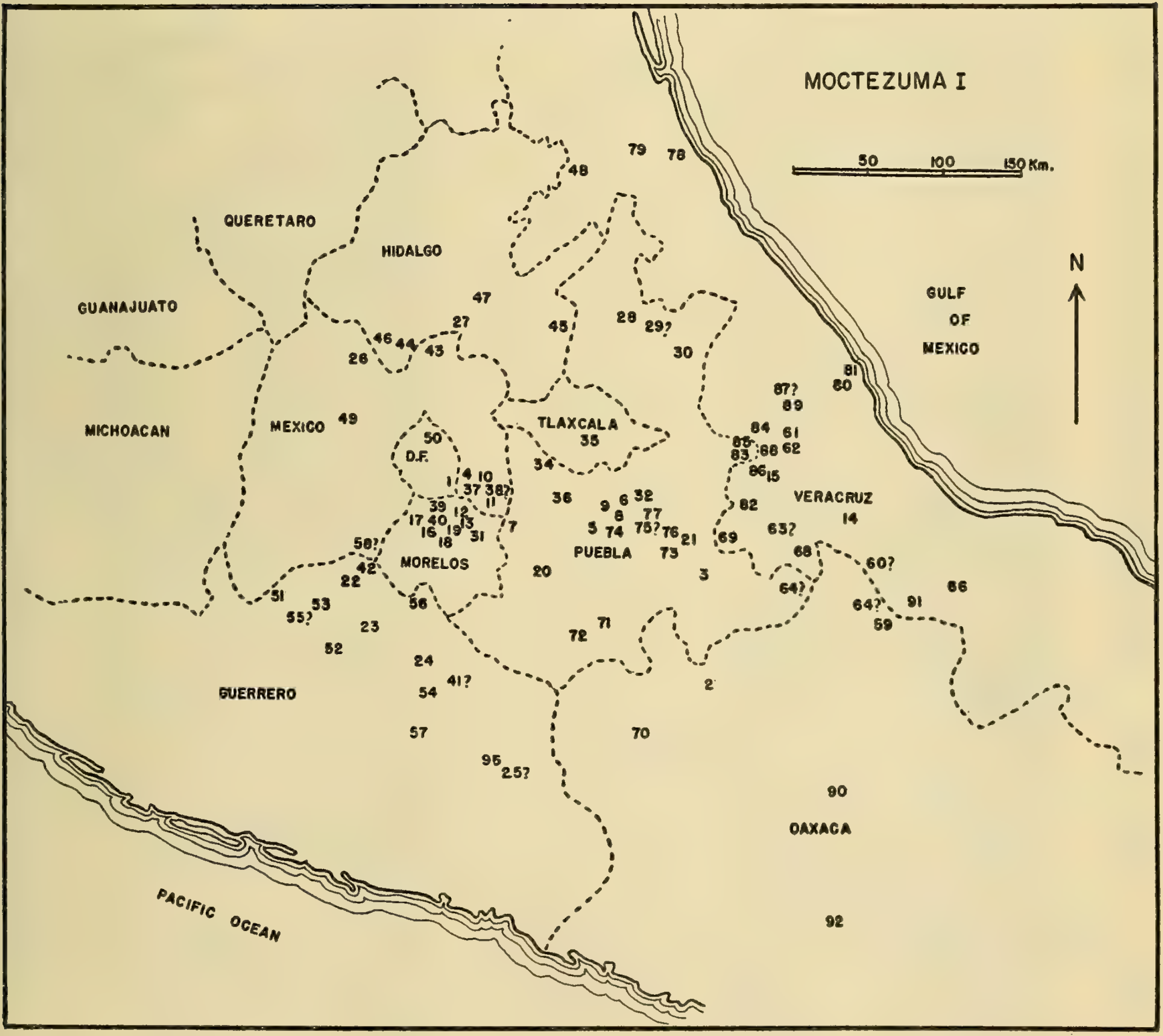
[16] Not shown on our map. Tlalhuica refers to a group of people of Nahua speech, living south of the Federal District, principally in the present State of Morelos. Conquered pueblos in the Tlalhuica zone (Nos. 9, 18, 40, 41) appear in the Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Torquemada, and Ixtlilxochitl.

[17] According to Ixtlilxochitl (2: 196), Netzahualcoyotl reestablished Texcocan dominion over Tulancingo, Huauchinango, "Jicotepec" (Villa Juárez), and the sierra Totonac, before the Triple Alliance bore down on the Tlalhuica.

[18] Modern Tepotzotlán lies north of the Valley of Mexico, in the State of Mexico. We suspect, however, that Ixtlilxochitl refers not to this pueblo, but to Tepoztlán, in modern Morelos; he himself places the conquered town in the Tlalhuica zone.

[19] Of the block of pueblos to which footnote 19 refers, most are considered by other sources to be conquests of Moctezuma I. An exception is "Chalco" (see footnote 5, above) and possibly "Mazahuacan," which may refer to the conquest of various pueblos in the Mazahua zone, such as Nos. 24 and 25 (Códice Chimalpopoca, Colección de Mendoza).

Ixtlilxochitl alone appears to place these conquests during the reign of Itzcoatl; since he runs contrary to other sources, the pueblos he enumerates have not, with exception of "Chalco," been assigned numbers, nor have they been included on map 13. We have taken the liberty of considering them among the conquests of Moctezuma I (map 14).



MAP 14.—Mexican wars: Moctezuma I (1440–69).

(For legend, see pp. 292–295.)

Legend to map 14

Mexican wars: Moctezuma I (1440–69). See legend to map 10.

Key No.	Source pueblo	Page	Pueblo identification
	Códice Chimalpopoca:		
1	Cuitlahuacas [1]	51	Tlahuac, D. F.
2	Cohuayxtlahuacan	52	San Juan Bautista Coixtlahuaca, Oaxaca.
3	Atezcahuacan [2]	53	Tehuacán, Puebla.
4	Chalco [3]		Tlalmanalco de Velázquez, México.
5	Huehuetlan [4]		Huehuetlán el Chico, Puebla.
6	Tepeyacahuacas	54	Tepeaca, Puebla.
7	Coatépec		Coatepec, Puebla.
8	Tecalco [4a]		Tecali de Herrera, Puebla.
9	Cuauhtinchan [5]		Cuautinchán, Puebla.
	Chalco [3]	67	See 4.
10	Chiconquiyauhco		Chiconquiahuitl, México
11	Mamalhueyocan		Santiago Mamalhuazuca, México.
12	Totollapan		Totolapan, Morelos.
13	Atltlatlauhyan		Atlatlahucan, Morelos.
14	Cuetlaxtlan		Cotaxtla, Veracruz.
15	Cuauhtochco		Huatusco de Chicuéllar, Veracruz.
	Cohuayxtlahuacan		See 2.
16	Xiuhtépec		Jiutepec, Morelos.
17	Cuauhnáhuac		Cuernavaca, Morelos.
18	Quiyauhtépec		Yautepec, Morelos.
19	Huaxtépec		Oaxtepec, Morelos.
20	Itzyocan		Matamoros de Izúcar, Puebla.
21	Yohualtépec		Yehualtepec, Puebla.
22	Tlachco		Taxco el Viejo, Guerrero.
23	Tepequacuilco		Tepecoacuilco de Trujano, Guerrero.
24	Tlalcoçauhtitlan		Tlalcozotitlán, Guerrero.
25	Quiyauhteopan [6]		Cuautipan, Guerrero.
26	Xillotépec		Jilotepec de Abasolo, México.
27	Itzcuincuitlapilco		Itzcuinquitlapilco, Hidalgo.
28	Tlapacoyan		Tlapacoyan, Puebla.
29	Chapolicxitla [7]		
30	Tlatlauhquitépec		Tlatlauquitepec, Puebla.
31	Yacapichtlan		Yecapixtla, Morelos.
	Anales de Tlatelolco:		
	Quauhtépec [8]	56	See 7.
32	Oztotícpac [8]		Santa María Oxtotipan, Puebla.
33	Couixca [9]	57	
	Couayxtlauaque [8]		See 2.
	Quauhtochca [8]		See 15.
	Cuetlaxteca [8]		See 14.
34	Uexotzíncatl [10]	58	Huejotzingo, Puebla.
35	Tlaxcaltécatl [10]		Tlaxcala, Tlaxcala.
36	Chololtécatl [10]		Cholula de Rivadabia, Puebla.
	Chalca [11]	59	See 4.
	Tepeyacacalque [8]		See 6.
	Colección de Mendoza:		
	Coayxtlahuacan	5 : 45	See 2.
	Mamalhuaztepec		See 11.
37	Tenanco		Tenango del Aire, México.
38	Teteuhtepec [12]		
	Chiconquiauhco		See 10.
	Xiuhtepec		See 16.
	Totolapa		See 12.
	Chalco		See 4.
	Quauhnahuac		See 17.
	Atlatlauhca		See 13.
	Huaxtepec		See 19.
	Yauhtepec		See 18.
39	Tepuztlan		Tepoztlán, Morelos.
40	Tepatzinco		Tepetzingo, Morelos.
	Yacapichtlan		See 31.
	Yoaltepec [13]		See 21.
	Tlachco		See 22.
	Tlalcozauhtitla		See 24.

See footnotes on page 295.

Legend to map 14—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Colección de Mendoza—Continued:		
41	Tepecuacinla[14]	5:45	Tepetlacingo, Guerrero.
	Quiyauhteopan		See 25.
42	Chontalcoatlan		Chontalcuatlán, Guerrero.
43	Hueypuchtla		Hueypoxtla, México.
44	Atotonilco		Atotonilco Tula, Hidalgo.
45	Axocopan		Xocopa, Hidalgo.
46	Tulan		Tula de Allende, Hidalgo.
	Xilotepec		See 26.
	Yzcuincuitlapilco		See 27.
47	Atotomilco		Atotonilco el Grande, Hidalgo.
	Tlapacoyom		See 28.
	Chapolycxitla		See 29.
	Tlatlauhquitepec		See 30.
	Cuetlaxtlan		See 14.
	Quauhtochco		See 15.
	Historia de los mexicanos por sus pinturas:		
	Cuaistrauaca	231	See 2.
	Cuetlastla		See 14.
	Codex Telleriano-Remensis:		
48	Chicoaque[36]	5: 150	Chicontepec, Veracruz.
	Coatlaxtla		See 14.
49	Coyxiquipilco[15]	5: 151	Jiquipilco el Viejo, México.
	Chalco[3]		See 4.
	Tlaxcatlecas[16]		See 35.
	Torquemada:		
	Chalcas[17]	1: 153	See 4.
50	Tlatilulcas[18]		Tlatelolco, D. F.
	Cohuixcas	1: 157	See 33.
51	Oztomantlacas[19]		"Oztuma," Guerrero.
52	Cueçaltecas		Cuetzala del Progreso, Guerrero.
53	Ichcateupantecas		Ixcateopan, Guerrero.
54	Teoxahualcas		Teohaxtitlán, Guerrero.
55	Poctepecas[20]		Pochote, Guerrero.
	Tlachco		See 22.
56	Tlachmalac		Tlaxmalac, Guerrero.
57	Chilapanecas		Chilapa, Guerrero.
	Quauhteopan		See 25.
58	Tçumpahuacan[21]		Zumpahuacán, México.
	Chalcas	1: 158	See 4.
	Cohuaixtlahuacan	1: 159–160	See 2.
	Tlaxcaltecas[22]	1: 160	See 35.
	Huexotcincas[22]		See 34.
59	Tochtepec[36]		San Juan Bautista Tuxtepec, Oaxaca.
60	Tepçol[23]		
61	Tzapotla		Zapotitla, Veracruz.
62	Tototlan		Totutla, Veracruz.
63	Tlatlactetelco[24]		"Tatatelco," Veracruz.
64	Chinantla[25]		
65	Quauhnochco[26]		
66	Coçamalotecas		Cosamaloapan de Carpio, Veracruz.
	Quauhtochco	1: 161	See 15.
	Chalcas		See 4.
	Cuetlaxtlan		See 14.
	Tlaxcaltecas[10]		See 35.
	Huexotcincas[10]		See 34.
	Chololtecas[10]		See 36.
	Chalcas	1: 163	See 4.
	Tepeaca	1: 164	See 6.
67	Cuextlan[27]		
68	Tlahuitolan		Tlacuilola, Veracruz.
69	Coxolitlan		Coxolitla, Veracruz.
70	Tamaçolan		San Juan Tamazola, Oaxaca.
71	Acatla		Acatlán de Osorio, Puebla.
72	Piaztlan		Piaxtla, Puebla.
73	Tetlcoyocan		San Gabriel Tetzoyocan, Puebla.
74	Xilotepec		Jilotepec, Puebla.
75	Toçoco[28]		

See footnotes on page 295.

Legend to map 14—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Tezozomoc:		
	Chalco [3]	99	See 4.
	Tepeaca	100	See 6.
76	Tecamachalco		Tecamachalco, Puebla.
	Tepeaca	102	See 6.
	Tecalco		See 8.
	Cuauhtinchan		See 9.
77	Acatcinco		Acatzingo de Hidalgo, Puebla.
	Tziccoac	105	See 48.
78	Tuzpa [36]		Tuxpan, Veracruz.
79	Tamachpa	106	Temapache, Veracruz.
80	Zempoala [29]	122	"Cempoala," Veracruz.
81	Quiahuiztlan [29]		"Quiahuixtlan," Veracruz.
82	Ahuilizapan	128	Orizaba, Veracruz.
83	Chichiquilan		Chichiquila, Puebla.
84	Teoyzhuacan		Ixhuacán de los Reyes, Veracruz.
85	Quimichtlan		Quimixtlán, Puebla.
86	Tzactlan		Zacatla, Veracruz.
87	Macuixochitlan [30]		
88	Tlatictlan		Tetitlán, Veracruz.
89	Ozeloapan [30a]		"Oceloapan," near Puente Nacional, Veracruz.
	Cuetlaxtlan		See 14.
	Coayxtlahuacan	135	See 2.
90	Huaxaca [31]	137	Oaxaca, Oaxaca.
	Ahuilizapan	145	See 82.
	Teoyzhuacan		See 84.
	Chichiquilan		See 83.
	Quimichtlan		See 85.
	Macuilxochitlan		See 87.
	Tlactitlan		See 88.
	Ozeloapan		See 89.
	Cuetlaxtlan		See 14.
	Huaxaca	160	See 90.
91	Otlatlan	161	Otatitlán, Veracruz.
92	Miahuatecas		San Andrés Miahuatlán, Oaxaca.
	Códice en Cruz:		
	Chalco [3]	44	See 4.
	Quauhteopan [32]	51	See 25.
	Coaixtlahuacan [32]	52	See 2.
	Chalco [3]	53	See 4.
	Ixtlilxochitl:		
93	Tlalhuicas [33]	2: 196	
	Tepozotlan [34]		See 39.
	Huaxtepec		See 19.
	Chalco [35]		See 4.
	Itzocan [35]		See 20.
	Tepecyacan [35]		See 6.
	Tecalco [35]		See 8.
	Teohuacan [35]		See 3.
	Coaixtlahuacan [35]		See 2.
	Cuetlachtlan [35]		See 14.
	Hualtepec [35]		See 21.
	Quauhtochco [35], [36]		See 15.
94	Mazahuacan [37], [38]	2: 198	
	Tlapacoyan [38]		See 28.
	Tlauhcocautitlan [38]		See 24.
	Cohuixco	2: 201	See 33.
	Oztoman		See 51.
	Quezaltepec		See 52.
	Ixcateopan		See 53.
	Teozcahualco		See 54.
	Poctepec		See 55.
	Tomazolapan		See 70.
	Chilapan		See 57.
	Quiauhteopan		See 25.
95	Ohuapan		Ocuapa, Guerrero.
	Tzompahuacan		See 58.
	Cozamaloapan		See 66.

See footnotes on page 295.

Legend to map 14—Continued

[1] The Códice Chimalpopoca mentions war with Tlahuac, in the course of which the Mexicans took the city. Nevertheless, Tlahuac does not appear in other lists of conquests. It may be that the war reported by the Códice Chimalpopoca was merely a byproduct of the Triple Alliance aggressions against "Chalco," in the course of which the Mexican troops forced their way through Tlahuac (Torquemada 1: 151).

[2] The Códice Chimalpopoca states merely, "fueron a combatir a Atezcahuacan." But the conquest of Tehuacán is confirmed by Ixtlilxochitl (2: 196), although he attributes it to Itzcoatl (see footnote 19, map 13).

[3] The Códice Chimalpopoca (p. 53) appears to indicate that, following a long period of wars with "Chalco," the latter finally was subjected by the Triple Alliance, under Moctezuma I (see footnotes 3, 9, map 11; footnote 3, map 12; footnote 5, map 13).

The conquest appears to be confirmed elsewhere (p. 67) in the same source, as well as in the Colección de Mendoza, the Codex Telleriano-Remensis, Tezozomoc, Códice en Cruz, and Ixtlilxochitl. The latter, however, places the conquest during the reign of Itzcoatl (see footnote 19, map 13).

Torquemada (1: 153) makes it clear that, despite the alleged defeat, "Chalco" continued in rebellion for 30 years more, and he mentions (1: 158, 161, 163) new uprisings and subjugations during the reign of Moctezuma I, following the supposed conquest.

[4] Doubtful. The Códice Chimalpopoca does not state definitely that Huehuetlán was conquered by the Mexicans, and the implication of conquest is not particularly strong. Moreover, no confirmation of this supposed victory is found in other sources which we have examined.

[4a] Identification of "Tecalco" with modern Tecali is well-founded. "Tecalco" usually appears in association with Tepeaca (legends to maps 14, 15). Moreover, the shift in final syllable is recorded by Muñoz Camargo (p. 247).

[5] Following the conquest of Cuautinchán, Netzahualcoyotl decided to dedicate a new temple. In honor of the occasion, he planned a campaign against Zumpango, Jilocingo, and "Citlaltépetl," and in this the Mexicans participated (Códice Chimalpopoca, p. 54). Apparently this was the war in which Totonac and Huasteca were defeated (ftn. 46, p. 272).

[6] The Matrícula de tributos (5: 76) groups this town with pueblos located in modern Guerrero; moreover, Torquemada (1: 157) writes it thus, "Quauhteopan." These two facts suggest identification with Cuautipan, Guerrero.

[7] Not identified (ftn. 36, p. 268).

[8] For each pueblo to which footnote 8 refers, the Anales do not speak explicitly of conquest, but use merely the expression "they perished." However, the conquests are confirmed elsewhere:

Coatepec: Códice Chimalpopoca.

Coixtlahuaca: Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas, Torquemada, Tezozomoc.

Huatusco: Códice Chimalpopoca, Colección de Mendoza, Torquemada.

Cotaxtla: Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas, Codex Telleriano-Remensis, Torquemada, Tezozomoc.

Tepeaca: Códice Chimalpopoca, Torquemada, Tezozomoc.

Moreover, Ixtlilxochitl (2: 196) confirms the conquests of Coixtlahuaca, Huatusco, Cotaxtla, and Tepeaca, although he places them during the reign of Itzcoatl (see footnote 19, map 13).

In fact, Oxtotipan is the only pueblo whose conquest is not confirmed by other sources. Nevertheless, the close agreement between the list given by the Anales de Tlatelolco and the conquests enumerated by other sources, leads us to suspect that Oxtotipan should be regarded as a Mexican conquest—the more particularly since it lies in the Tepeaca area of modern Puebla, a zone profoundly affected by the conquests of Moctezuma I.

[9] Not shown on our map. "Estos *couixcas* y *tlapanecas* son unos que . . . están poblados en *Tepequacuilco* y *Tlachimalacac*, en la provincia de *Chilapan*" (Sahagún 3: 133). The northeastern area of modern Guerrero clearly is indicated.

According to the Anales de Tlatelolco (p. 57), Cuernavaca took the initiative in the conquest of the Cohuixca but allowed the Mexicans to share in the booty. Nevertheless, Torquemada (1: 157) and Ixtlilxochitl (2: 201) regard the victory as one of the Triple Alliance.

[10] The Anales de Tlatelolco do not state that Huejotzingo, Tlaxcala, and Cholula were conquered, but explain that their warriors were defeated in the course of one of the Cotaxtla campaigns (ftn. 43, p. 271).

[11] The Anales de Tlatelolco do not speak explicitly of conquest, but it is clearly evident that there were repeated hostilities between the Mexicans and "Chalco" during the reign of Moctezuma I (see footnote 3, above).

[12] Not identified; the association with "Tenanco" and "Chiconquiauhco" suggests the location which has been assigned in map 14.

[13] Identification dubious. The Códice Chimalpopoca sandwiches "Yohualtépec" between a town in Puebla and one in Guerrero; the "Yoaltepec" of the Colección de Mendoza appears in the list between a pueblo in modern Morelos and one in Guerrero. The "Hualtepec" of Ixtlilxochitl is associated with "Teohuacan, Cuetlachtlan, Quauhtochco," all relatively close to modern Yehualtepec, in eastern Puebla, with which we have tentatively identified the conquest.

[14] See footnote 11, map 13.

[15] The Codex Telleriano-Remensis does not claim a conquest, but mentions a battle in this pueblo, which probably was related to the conquest of various Otomí-Mazahua pueblos in this same general area (Nos. 26, 27, 44, 46; Códice Chimalpopoca, Colección de Mendoza).

[16] The Codex Telleriano-Remensis merely reports a battle with Tlaxcalans on the fringes of Texcoco. At this time, the Triple Alliance was beginning to take steps to surround and isolate Tlaxcala.

[17] See footnote 3, above.

[18] Torquemada reports a war between Tenochtitlan and Tlatelolco, in which the ruler of the latter perished. Nevertheless, Tlatelolco did not become a tributary of Tenochtitlan until the days of Axayacatl (See No. 3, map 15, table 18).

[19] This settlement no longer exists, but its ruins are known by the name of the old pueblo.

[20] Identification doubtful. The pueblo is mentioned in company with others of modern Guerrero, and there is a slight resemblance between the ancient name and that of the modern pueblo with which it dubiously has been identified.

[21] There is a Tzompahuacán in modern Puebla, but we believe it more likely that the town in question is to be identified with Zumpahuacán, in Mexico, for Torquemada mentions the conquest in company with pueblos which lie in northwestern Guerrero.

[22] Torquemada does not give Tlaxcala and Huejotzingo as conquered pueblos but notes that their warriors were defeated in the course of the Triple Alliance war with Coixtlahuaca.

[23] Not identified. The association with "Tochtepec, . . , Tzapotla, Tototlan" and "Tlatlactetelco" suggests a location in northeast Oaxaca or in adjacent Veracruz.

[24] Not identified with any modern pueblo, but the name appears on a sixteenth-century map (No. 57, of the Colección Orozco y Berra), and the location shown there is confirmed by the Suma (No. 843).

[25] The source is not explicit and may refer either to a town or to the province of the Chinantecs. One of the pueblos of the latter is "Tochtepec," which Torquemada lists among the Mexican conquests. Elsewhere, Torquemada (1: 187) speaks of "Chinantla" as a province. Nevertheless, in the sixteenth century, there was a pueblo of this name in the zone touched by the present campaign; it is possible that this town (Suma, No. 6) is intended rather than the province.

[26] Not identified; perhaps "Quauhtochco" (Huatusco, No. 15) is intended.

[27] Not identified: see ftn. 37, p. 269.

[28] Not identified; the pueblos in association suggest a location in modern Puebla.

[29] "Cempoala" and "Quiahuixtlan" were involved in Moctezuma's campaign. But in the long description given by Tezozomoc (pp. 122–131), they did not become the scene of battle. Nevertheless, subsequently, they were considered tributaries of the Triple Alliance (pp. 272–273), although, strangely enough, their conquest is not reported in other sources and neither "Cempoala" nor "Quiahuixtlan" appears in the Matrícula de tributos. Both pueblos are extinct, but both are well known archeologically.

[30] Not identified. The presumed location has been indicated on the basis of the Códice Tonayan (Barlow, 1947 b) (ftn. 40, p. 270).

[30a] The pueblo no longer exists but the name still is associated with its ruins (García Payón, 1947, p. 303).

[31] At this time, Tezozomoc does not speak of the conquest of Oaxaca, but remarks that prisoners from there were sacrificed in Tenochtitlan. Nevertheless, later, (p. 160) he does describe the conquest of the pueblo of that name.

[32] Dibble's interpretation of the Códice en Cruz (pp. 50–51) is a year of plenty. However, he suggests that the glyph is similar to that of "Quiyauhteopan" as shown in the Colección de Mendoza (5: 45), although noting that in the Códice en Cruz it is not accompanied by any sign which would indicate war or conquest.

The conquest of Cuautipan is reported in other sources (Códice Chimalpopoca, Colección de Mendoza, Torquemada, Ixtlilxochitl), and it is by no means impossible that the Códice en Cruz actually gives us, somewhat ambiguously, the date for this victory.

Dibble's interpretation of Coixtlahuaca likewise is dubious, but we have confirmation in other sources (see footnote 8 above).

[33] See footnote 16, map 13.

[34] See footnote 18, map 13.

[35] See footnote 19, map 13.

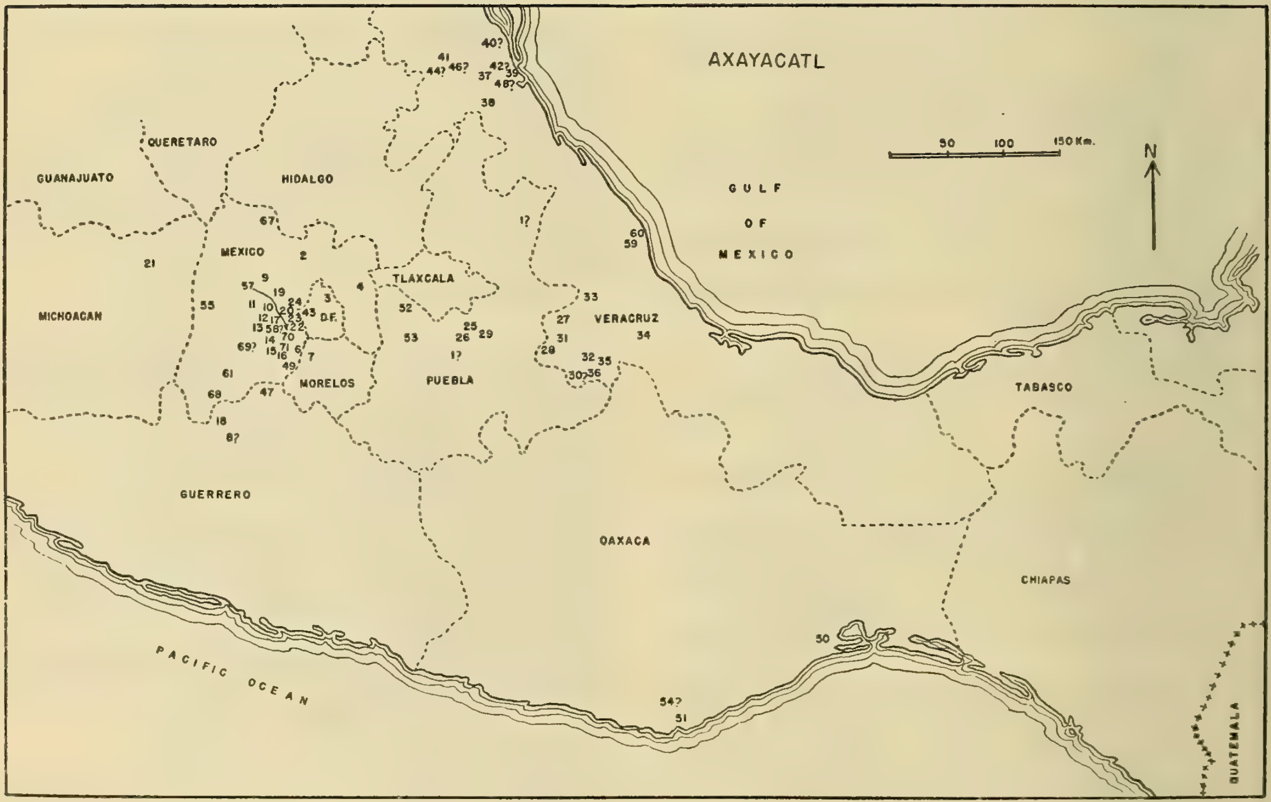
[36] Following the conquest of Huatusco, Ixtlilxochitl has Netzahualcoyotl conquer Tuxpan, Chicontepec, and Tuxtepec. These victories he claims for Texcoco, not for the Triple Alliance.

But other authorities credit Mexico with the conquest of Tuxpan (Tezozomoc, p. 105), Chicontepec (Codex Telleriano-Remensis 5: 150; Tezozomoc, p. 105), and Tuxtepec (Torquemada 1: 160).

Moreover, Ixtlilxochitl reports other conquests for Texcoco alone; these are mentioned elsewhere (ftn. 37, p. 269).

[37] See footnote 11, map 10.

[38] Ixtlilxochitl apparently places these conquests in the days of Itzcoatl, although his statement is confused. Other sources attribute them to Moctezuma I. "Mazahuacan" is within the area mentioned in footnote 15, above, and Tlapacoyan and Tlalcozotitlán appear in the Códice Chimalpopoca (p. 67) and the Colección de Mendoza (5: 45), all three as conquests of Moctezuma I.



Map 15.—Mexican wars: Axayacatl (1469–81).

(For legend, see pp. 297–300.)

Legend to map 15

Mexican wars: Axayacatl (1469–81). See legend to map 10.

Key No.	Source pueblo	Page	Pueblo identification
	Códice Chimalpopoca:		
1	Tlatlauhquitepecas [1]	55	Tlatlauquitepec, Puebla.
2	Cuaxoxocan [2]		Cuaxoxoca, México.
3	Tlatilolcas [3]		Tlatelolco, D. F.
4	Huexotla [4]	56	Huexotla, México.
5	Matlatzincas [5]		
6	Ocuilan		Ocuilan de Arteaga, México.
7	Cuauhnahuacas [6]		Cuernavaca, Morelos.
8	Poctepecas [7]		Pochote, Guerrero.
	Matlatzinco	57	See 5.
9	Xiquipilco		Jiquipilco el Viejo, México.
	Tlatilolco	67	See 3.
	Xiquipilco		See 9.
10	Tollocan		Toluca de Lerdo, México.
11	Tzinacantépec		San Miguel Zinacantepec, México.
12	Tlacotépec		Tlacotepec, México.
13	Callimayan		Calimaya de Díaz González, México.
14	Teotenanco		Tenango de Arista, México.
15	Tenantzinco		Tenancingo de Degollado, México.
16	Xochiyacan		Xochiaca, México.
	Ocuillan		See 6.
17	Metépec		Metepec, México.
18	Oztoman [8]		"Oztuma," Guerrero.
19	Capolloac		Capulhuac de Mirafuentes, México.
20	Atlappolco		San Pedro Atlapulco, México.
21	Tlaximalloyan		Ciudad Hidalgo, Michoacán, formerly "Taximaroa."
22	Xallatlauhco [9]		Jalatlaco, México.
23	Cuappanohuayan		San Juan Coapanoaya, México.
24	Ocoyácac		Ocoyoacac, México.
25	Tepeyácac		Tepeaca, Puebla.
26	Tecalco [9a]		Tecali de Herrera, Puebla.
27	Cuezcomayxthlahuacan [10]		Coscomatepec de Bravo, Veracruz.
28	Matlatlan		Maltrata, Veracruz.
29	Oztotícpac		Santa María Oxtotipan, Puebla.
30	Tlaollan [11]		Tlaquilpa, Veracruz.
31	Ahuilizapan		Orizaba, Veracruz.
32	Tozcauhtlan [12]		Poxcautla, Veracruz.
33	Tototlan		Totutla, Veracruz.
34	Cuetlaxtlan		Cotaxtla, Veracruz.
35	Cuetzalóztoc		Quetzaltotoc, Veracruz.
36	Mixtlan		San Andrés Mixtla, Veracruz.
37	Tzapotitlan		Zapotitlán, Veracruz.
38	Micquetlan		Mequetla, Veracruz.
39	Tochpan		Tuxpan, Veracruz.
40	Tenextícpac [13]		"Tenestiquepaque," Veracruz.
41	Tapátel		Tampatel, Veracruz.
42	Tamómox [14]		"Tamohox," Veracruz.
	Anales de Tlatelolco:		
	Tlatelolco [3]	17	See 3.
	Xiquipilco		See 9.
	Tolocan		See 10.
	Tzinacantépec		See 11.
	Tlacotépec		See 12.
	Calimaya		See 13.
	Teotenanco		See 14.
	Tenantzinco		See 15.
	Xochiu . . .[15]		See 16.
43	Quauhximalpa		Cuajimalpa, D. F.
	Xalatlauhco		See 22.
	Quapanouaya		See 23.
	Teouyácac [16]		See 24.
	Tepeyácac		See 25.
	Tecalco		See 26.
	Cuezcómatl [17]		See 27.
	Yácac [17]		See 27.

See footnotes on page 300.

Legend to map 15—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Anales de Tlatelolco—Continued		
	Matlatlan	17	See 28.
	Oztotícpac		See 29.
	Tlauililpan [11]		See 30.
	Pozcauhtlan		See 32.
	Tototlan		See 33.
	Cuextla [18]		See 34.
	Cuezalóztoc		See 35.
	Mixtlan		See 36.
	Tetzapotitlan		See 37.
44	Coyouacan [19]		Chicontepec, Veracruz.
	Tochpan		See 39.
45	Cuextecatépec [20]		
46	Occentépetl [21]		
	Tlatelolco [3]	59	See 3.
	Matlatzinca [22]		See 5.
	Ocuilteca [22]		See 6.
	Colección de Mendoza:		
	Tlatilula	5: 46	See 3.
	Atlapula		See 20.
	Xalatlan [23]		See 22.
	Tlacotepec		See 12.
	Metepec		See 17.
	Capuluac		See 19.
	Ocoyacac		See 24.
	Quauhpanoayan		See 23.
	Xochiacan		See 16.
	Teotenanco		See 14.
	Calymaya		See 13.
	Çinacantepec		See 11.
	Tulucan		See 10.
	Xiquipilco		See 9.
	Tenanzinco		See 15.
	Tepeyaca		See 25.
	Tlaximaloyan		See 21.
	Oztoma		See 18.
47	Xocotitlan		Jocotitlán. Guerrero.
	Ocuilan		See 6.
	Oztoticpac		See 29.
	Matlatlan		See 28.
	Cuezcomatlyyacac [10]		See 27.
	Tecalco		See 26.
	Cuetlaxtlam		See 34.
	Puxcauhtlam		See 32.
	Ahuilizapan		See 31.
	Tlaolan [11]		See 30.
	Mixtlan		See 36.
	Cueçaloztoc		See 35.
	Tetzopotitlan		See 37.
	Miquiyetlan		See 38.
	Tamuoc		See 42.
	Tanpatel		See 41.
	Tuchpan		See 39.
	Tenexticpac		See 40.
48	Quauhtlan [24]		
	Historia de los mexicanos por sus pinturas:		
	Tatilulco	231	See 3.
	Cuetlasta		See 34.
49	Malinalco [25]		Malinalco, México.
	Matalcingo		See 5.
	Codex Telleriano-Remensis:		
	Matalcingo	5: 151	See 5.
	Toluca		See 10.
	Tlatelulco		See 3.
	Coatlaxtla		See 34.
	Oquila		See 6.
	Xiquipilco	5: 152	See 9.

ee footnotes on page 300.

Legend to map 15—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Torquemada:		
50	Tecuantepec	1: 172	Santo Domingo Tehuantepec, Oaxaca.
51	Coatulco		Santa María Huatulco, Oaxaca.
52	Huexotzinco [26]		Huejotzingo, Puebla.
53	Atlixco [26]		Atlixco, Puebla.
	Cuetlachtecas	1: 176	See 34.
54	Xuchitepecas [27]		San Miguel Suchixtepec, Oaxaca.
	Tlatelulco	1: 180	See 3.
	Matlatçinca	1: 181	See 5.
	Xalatlauhco [9]		See 22.
	Tçinacantepec		See 11.
	Ocuiltecas		See 6
55	Malacatepec		San José, México, formerly "Malacatepec."
56	Coatepec [28]		
	Xiquipilco		See 9.
	Matlatçincas	1: 182	See 5.
	Toluca		See 10.
	Tlacotepec		See 12.
	Tochpan		See 39.
	Tototlan		See 33.
	Tezozomoc:		
	Tlatelulco	198	See 3.
	Matlatzincas	205	See 5.
	Cuapanoayan	206	See 23.
	Toluqueños	208	See 10.
	Calimaya		See 13.
57	Tepemaxalco		Tepemajalco, México.
58	Tlacotempan [29]		
	Tzinacantepec		See 11.
	Tlacotepec		See 12.
59	Zempoaltecas [30]	216	"Cempoala," Veracruz.
60	Quiahuiztecas [30]		"Quiahuixtlan," Veracruz.
61	Necantepec [31]	226	Nacatepec, México.
62	Mechoacan [32]	227	
	Tlazimaloyan [33]	230	See 21.
63	Tliliuhquitepec [34]	236	
	Códice en Cruz:		
	Tlatelolco	59	See 3.
	Huexotla [35]	61	See 4.
	Matlaltzincas [35]		See 5.
	Cuetlaxtlan [35]	62	See 34.
	Xiquipilco		See 9.
	Ixtlilxochitl:		
	Tlatelulco	2:251	See 3.
	Matlaltzinco	2:256	See 5.
	Xalatlahuco [9]		See 22.
	Tzinacantepec		See 11.
	Ocuiltecas		See 6.
	Malacatepec		See 55.
	Coatepec		See 56.
64	Otomíes [36]		
65	Chichimecas [36]		
66	Macahuas [36]		
	Matlatzincas [36]		See 5.
	Xiquipilco		See 9.
	Xocotitlan		See 47.
67	Xilotepec		Jilotepec de Abasolo, México.
	Teuhtenanco		See 14.
	Tlacotepec		See 12.
	Callimayan		See 13.
68	Amatepec		Amatepec, México.
69	Zimatepec [37]		
	Tolocan		See 10.
70	Maxtlacan [38]	2:257	Maxtleca, México.
71	Coquitzinco [38]		Joquicingo de León Guzmán, México.

See footnotes on page 300.

Legend to map 15—Continued

[1] This conquest appears isolated in the Códice Chimalpopoca and, moreover, is not mentioned in other sources. Accordingly, there are no associated pueblos to give clue to identification. Two modern towns are candidates: Magdalena Tlatlauquitepec and Tlatlauquitepec. The former appears to have been a relatively obscure settlement, and we think identification with the latter more likely, especially since, in the Matrícula de tributos (5: 86), Tlatlauquitepec is listed in company with Teziutlán.

[2] With respect to Cuaxoxoca, the Códice Chimalpopoca states merely that "fueron a pelear"; nor is conquest recorded in other sources.

[3] The Códice Chimalpopoca describes the war between Tlatelolco and Tenochtitlan. Conquest by the latter is confirmed elsewhere in the same source (p. 67), as well as in the Colección de Mendoza, the Historia de los mexicanos por sus pinturas, the Codex Telleriano-Remensis, Torquemada, Tezozomoc, Códice en Cruz, and Ixtlilxochitl. All these sources agree that Tlatelolco was defeated definitively, although the Anales de Tlatelolco confine themselves to mentioning war, without indicating the outcome.

[4] The Códice Chimalpopoca reports war with Huexotla, as does, somewhat dubiously, the Códice en Cruz.

[5] Not shown on map. See footnote 9, map 13. The Códice Chimalpopoca states merely that "se diseminaron los matlatzincas," which we suspect implies conquest. A series of conquered pueblos in the Matlatzinca area, west of the Valley of Mexico, is listed elsewhere in the same source (p. 67), as well as in the Anales de Tlatelolco, the Colección de Mendoza, the Codex Telleriano-Remensis, Torquemada, Tezozomoc, and Ixtlilxochitl (see map).

[6] The Códice Chimalpopoca states that those of Cuernavaca were "destroyed," from which we infer conquest. Nevertheless, other sources are not confirmatory.

[7] Here, the Códice Chimalpopoca states that "se perdieron," which we interpret as conquest or, more accurately, reconquest, for this pueblo was subjected in the days of Moctezuma I (No. 55, map 14). The identification is discussed in footnote 20, map 14.

[8] Pueblo now extinct; name attached to well-known archeological site.

[9] The Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza list this pueblo as conquered; Torquemada and Ixtlilxochitl merely have it repopulated during the reign of Axayacatl.

[9a] See footnote 4a, map 14.

[10] There are variant spellings: "Cuezcómatl Yácac" (Anales de Tlatelolco), "Cuezcomatlyyacac" (Colección de Mendoza). In each case, the pueblo is associated with settlements in modern Puebla and in western Veracruz. Accordingly, we suspect the name may survive in modern Coscomatepec.

[11] From the sequential order of listing, it is evident that "Tlaollan" (Códice Chimalpopoca) and "Tlauililpan" (Anales de Tlatelolco) are one and the same. In that case, the pueblos in association suggest identification with modern Tlaquilpa.

[12] This pueblo evidently is the same as "Pozcauhtlan" (Anales de Tlatelolco, Colección de Mendoza, Nazareo 10: 119). Modern Poxcautla does not appear in the 1930 census but is shown on the Carta general (pl. VIII).

[13] This pueblo, now extinct, can be located approximately (ftn. 49, p. 274).

[14] Not in the 1930 census. The Doctrinas (p. 219) locate this pueblo in the vicinity of Tamiahua and "Tenexticpac," where it has been placed on our map.

[15] In the Anales de Tlatelolco, this name is incomplete, but the missing parts can be supplied by comparison with the lists of the Códice Chimalpopoca and the Colección de Mendoza.

[16] "Teouyácac" occupies in the list of the Anales de Tlatelolco, the same relative position as does "Ocoyácac," in the Códice Chimalpopoca. Accordingly, we have identified "Teouyácac" with modern Ocoyoacac.

[17] Here, what we take to be the ancient name of Coscomatepec has been separated and appears as two distinct pueblos; see footnote 10, above.

[18] In the list of the Anales de Tlatelolco, "Cuextla" occupies the same relative position as does "Cuetlaxtlan," in the Códice Chimalpopoca. Accordingly, in this case, we have identified "Cuextla" with Cotaxtla (ftn. 37, p. 269).

[19] Our guess is that "Coyouacan" is to be identified with "Tziuhcouacan" (Anales de Tlatelolco, p. 60). The latter clearly is the equivalent of "Tzicoac," which we have identified with modern Chicontepec (ftn. 33, p. 267).

[20] Not identified and not shown on map; it is possible that this is not a pueblo. The name translates "hill of the Cuexteca," and in the Anales de Tlatelolco, it follows two pueblos which we place in the Huasteca.

[21] Not identified; name and association suggest the Huasteca and in the Matrícula de tributos (5: 87) an "Oçelotepec" appears situated in the province of Tuxpan. It is queried on the map.

[22] Although the Anales de Tlatelolco state merely that "they perished," conquests in the Matlatzinca zone are amply confirmed by other data (see fn. 5, above).

As a matter of fact, the conquest of Ocuilan is confirmed specifically by the Códice Chimalpopoca, the Colección de Mendoza, the Codex Telleriano-Remensis, Torquemada, and Ixtlilxochitl.

[23] We suspect that "Xalatlan" may be modern Jalatlaco. In the Colección de Mendoza, it is listed immediately following "Atlapula," which is identifiable with Atlapulco, in the same general area.

[24] Not identified. The associated pueblos suggest a location in the Huasteca. During the sixteenth century, a settlement subject to Papantla was named "Quaotlan" (Suma, No. 449), but it seems unlikely that this town is indicated. It is queried on the map.

[25] The Historia de los mexicanos por sus pinturas states that Axayacatl appointed the ruler of Malinalco, which implies previous conquest, related perhaps to the subjection of nearby towns, such as Tenancingo and Tenango.

[26] Torquemada simply speaks of a war, in which the Mexicans were victorious; he remarks (1: 173), following this campaign, that the war "quedó abierta para todo tiempo." Such battles were not for conquest, but to obtain sacrificial victims. This type of war has been called *guerra florida*.

[27] Torquemada places "Xuchitepec" on the "coast of Anahuac," which might refer either to the Gulf or to the Pacific (ftn. 33, p. 16). We assume that in this case "Xuchitepec" is the province of that name in Oaxaca.

[28] Torquemada does not give sufficient detail to permit us to select between the three or four pueblos of this name in the Matlatzinca zone.

[29] Not identified; from the sequence in Tezozomoc, the town should lie between Tepemajalco and Zinacantepec. On our map, it is shown there accompanied by an interrogation point.

[30] In this passage, Tezozomoc does not speak definitely of the conquest of these two important Totonac towns, but his account implies an earlier subjection (ftn. 29, map 14), followed, in the days of Axayacatl, by formal gestures of submission.

[31] Tezozomoc states merely that this pueblo served as a base for the Mexican Army prior to the Michoacán campaign; this presupposes that it was in the hands of the Triple Alliance at that time.

[32] Not shown on our map. The "Mechoacan" of Tezozomoc probably corresponds pretty closely to the area covered by the State of Michoacán today.

[33] This pueblo is not said to be conquered; it merely was the spot where the Triple Alliance forces foregathered after their defeat at the hands of the Tarascans. The data at hand do not indicate if it had been conquered previously or in the course of the Michoacán campaign.

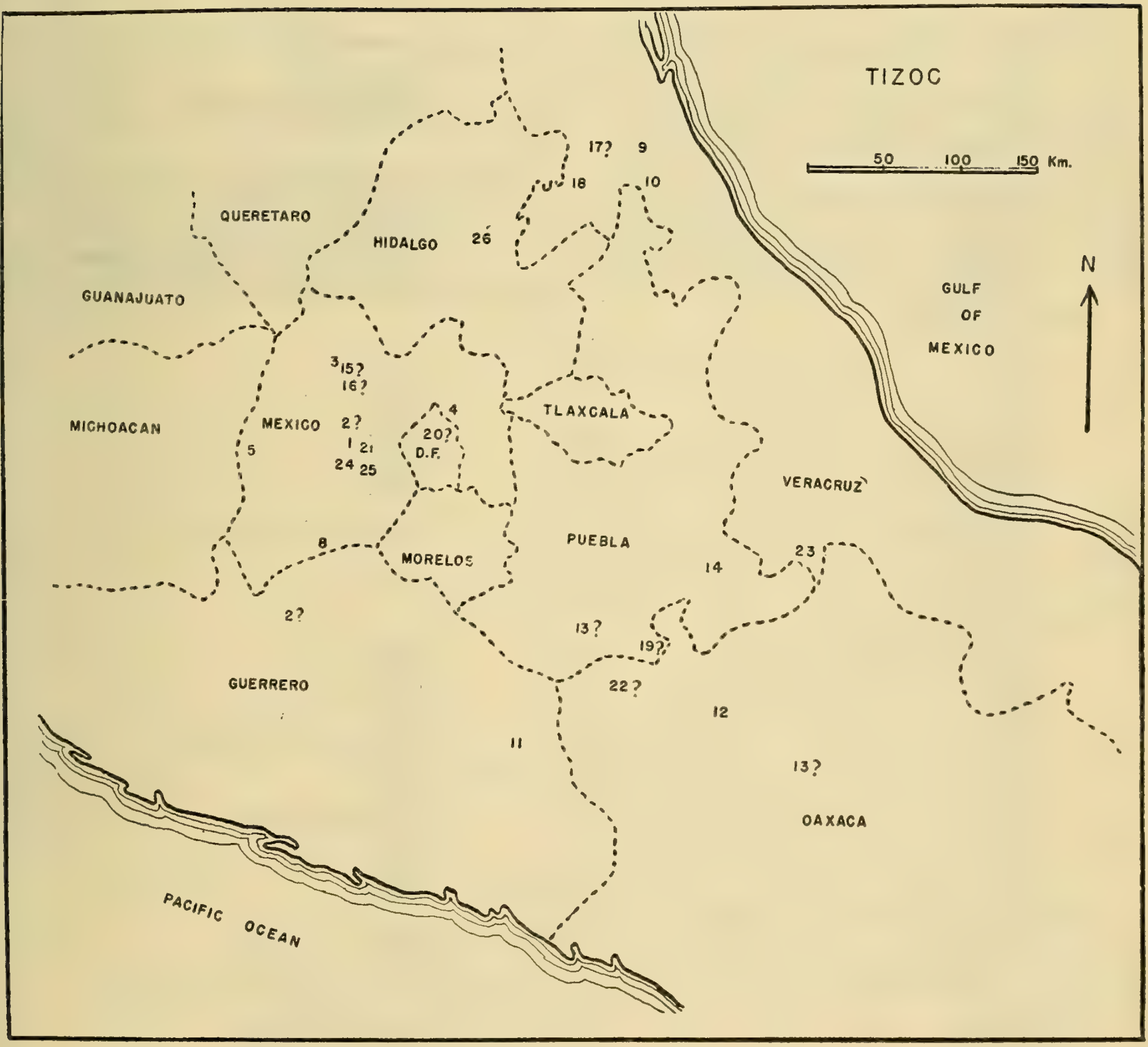
[34] Tezozomoc speaks of "Tliliuhquitepec" as if it were an enemy pueblo. We have been unable to identify it. The Codex Telleriano-Remensis (5: 151) seems to indicate that it was a hill where Mexican and Tlaxcalan forces battled.

[35] Dibble's interpretation of the Códice en Cruz is dubious. With respect to the conquest of Huexotla, see footnote 4, above; for the Matlatzinca zone, see footnote 5. The conquest of Cotaxtla is fully confirmed (Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis, and Torquemada).

[36] According to Ixtlilxochitl, the campaign was directed "contra los chichimecas y otomíes de todas las provincias que contienen tres naciones, que son otomíes, macahuas y matlatzincas." Thereafter, he lists the conquered pueblos (Nos. 9–10, 12–14, 47, 67–71), from which it is evident that the campaign lay almost exclusively within the present State of Mexico.

[37] Not identified. The order in which Ixtlilxochitl mentions these conquests suggests that "Zimatepec" may be in the Valley of Toluca or to the south.

[38] In the division of spoils which followed the Triple Alliance campaign, these pueblos were given to Texcoco (Ixtlilxochitl 2: 257).



Map 16.—Mexican wars: Tizoc (1481–86).

(For legend, see pp. 302–303.)

Legend to map 16

Mexican wars: Tizoc (1481–86). See legend to map 10.

Key No.	Source pueblo	Page	Pueblo identification
	Códice Chimalpopoca:		
1	Tecáxic	67	Tecaxic, México.
2	Tonallymoquetzayan [1]		
3	Toxico		Toxhí, México.
4	Ecatépec		Ecatepec Morelos, México.
5	Çillan		Chila, México.
6	Matlatzinco [2]		
7	Maçatépec [3]		
8	Ecatlyquappanco [4]		Tlapexco, México.
9	Tamapachco		Temapache, Veracruz.
10	Micquetlan		Mequetla, Veracruz.
11	Otlappan [5]		Tlapa, Guerrero.
12	Yancuitlan		Santo Domingo Yanhuitlán, Oaxaca.
13	Xochiyetlan [6]		Yetla, Oaxaca, or Yetlan, Puebla.
14	Atezcahuacan		Tehuacán, Puebla.
	Anales de Tlatelolco:		
15	Tequauhcózcac [7]	17	
16	Occetépec [7]		
	Toxico		See 3.
	Ecatépec		See 4.
	Tzilan		See 5.
	Matlatzinco		See 6.
	Mazauacan		See 7.
	Ecatlapechco		See 8.
	Matlapachco [8]		See 9.
17	Occentépetl [9]		
18	Tlatlauhquiycxic [10]		Tlatlacxoquico, Veracruz.
19	Tilmatlan [11]		
	Ycxochitlan		See 13.
	Atezcauacan		See 14.
20	Chicpantlaca [12]	59	
	Colección de Mendoza:		
	Tonalymoqueçayom	5: 47	See 2.
	Toxico		See 3.
	Ecatepec		See 4.
	Çilom		See 5.
	Tecaxic		See 1.
21	Tuluca		Toluca de Lerdo, México.
	Yamanitlam [13]		See 12.
	Tlapan		See 11.
	Atezcahuacan		See 14.
22	Maçatlam [14]		"Maçatlan," Oaxaca.
	Xochiyetla		See 13.
	Tamapacha		See 9.
	Ecatlyguapecha		See 8.
	Miquetlam		See 10.
	Historia de los mexicanos por sus pinturas:		
	Matalcingos [15]	231	See 6.
23	Tlaula [15]		Tlaquilpa, Veracruz.
	Codex Telleriano-Remensis:		
24	Cinacantepec [16]	2: 152	San Miguel Zinacantepec, México.
	Torquemada:		
25	Tlacotepec	1: 182	Tlacotepec, México.
	Tezozomoc:		
26	Meztitlan [17]	250–252	Metztitlán, Hidalgo.
27	Cuextlan [17]	251	
	Códice en Cruz:		
	Huastecos	64	See 27.

See footnotes on page 303.

Legend to map 16—Continued

[1] Barlow (1947 c, pp. 187–188) suggests that "Tonallymoquetzayan" may be modern Tonaliquizaya, northwest of Tetela, Guerrero; we do not find a settlement listed under this name in the 1930 census.

However, in both the Códice Chimalpopoca and the Colección de Mendoza, the pueblo appears together with Tecaxic, Toxhí, Ecatepec, and Chila, all in the State of Mexico; we suspect that the ancient town should be sought in this region rather than in Guerrero.

[2] See footnote 9, map 13.

[3] "Maçatepec" presumably is the equivalent of Mazahua (footnote 11, map 10); at least, in the Códice Chimalpopoca it occupies the place which, in the Anales de Tlatelolco, corresponds to Mazahua.

[4] "Ecatlyquappanco" evidently is the equivalent of "Ecatlapechco" and "Ecatlyguapecha," the latter respectively of the Anales de Tlatelolco and the Colección de Mendoza.

Our identification with Tlapexco is highly dubious. In both the Códice Chimalpopoca and the Anales de Tlatelolco, the pueblo falls between towns in the modern State of Mexico and in modern Veracruz. However, in the Colección de Mendoza, the association suggests a location in the Huasteca of Veracruz.

[5] "Otlappan" obviously corresponds to "Tlapan," of the Colección de Mendoza, hence is identifiable with modern Tlapa, in the State of Guerrero.

[6] "Xochiyetlan" might be identified either with modern Yetla, in Oaxaca, or with Yetlan, in Puebla; both possibilities are shown on the map.

[7] Not identified. The association of these two pueblos with Toxhí, Ecatepec, and Chila suggests a location in the modern State of Mexico, as shown on our map, or possibly an independent group in northern Veracruz (see footnote 21, map 15).

[8] "Matlapachco" corresponds to "Tamapachco" (Códice Chimalpopoca) and "Tamapacha" (Colección de Mendoza); we have identified it with Temapache, in modern Veracruz.

[9] Not identified, but obviously to be sought in the northern part of modern Veracruz (see footnote 21, map 15).

[10] Obviously located somewhere in northern Veracruz; the Anales de Tlatelolco speak of "Tlatlauhqui ycxi allá por Tziuhcóuac." We have identified the conquest with modern Tlatlacxoquico.

[11] Not identified; the two succeeding pueblos suggest a location somewhere in the modern Oaxaca-Puebla zone, and there we have placed it, with an interrogation point.

[12] Not identified. The Anales de Tlatelolco report the suppression of an uprising, thus implying previous conquest; the wording suggests a location not far from Tenochtitlan.

[13] We follow Peñafiel (p. 248) in interpreting "Yamanitlam" as Yanhuitlán.

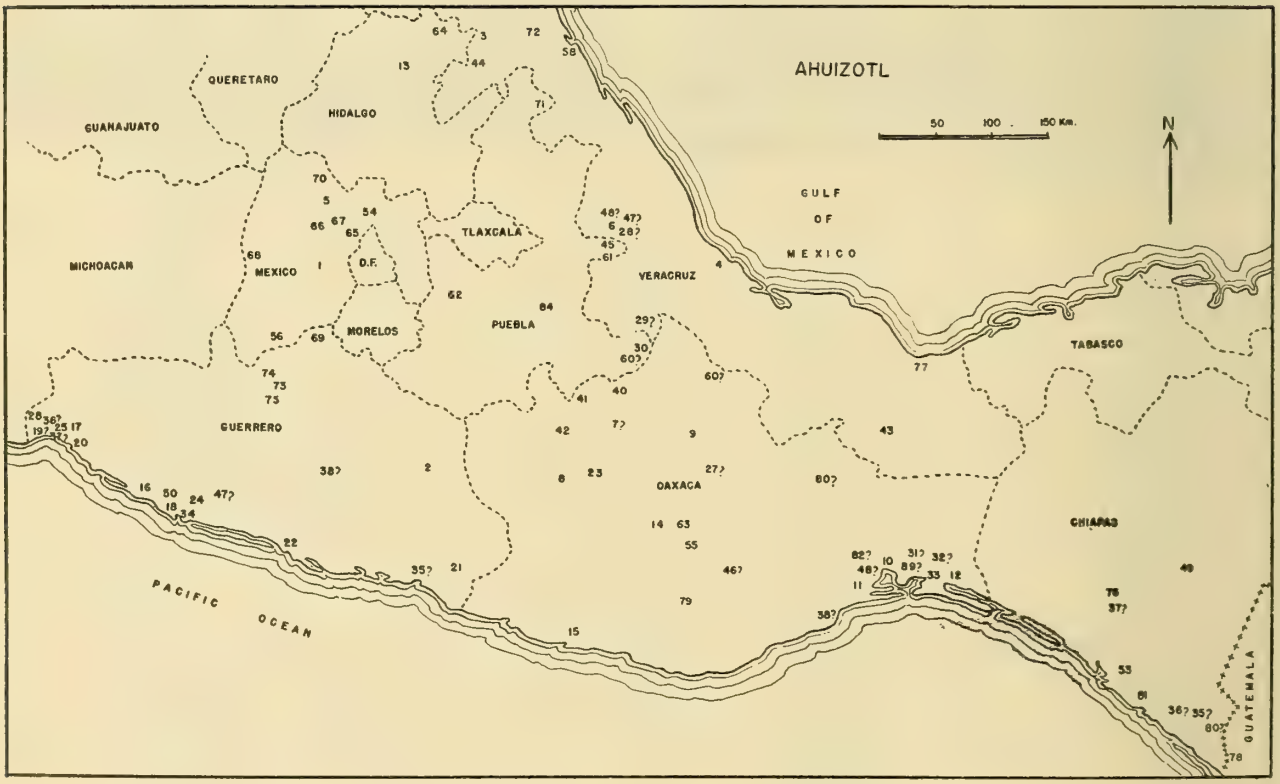
[14] Not identified; possibly the "Maçatlan" (Suma, No. 657) in the vicinity of Yanhuitlán and Tehuacán.

[15] The Historia de los mexicanos por sus pinturas states that victims of 'Matalcingos" and victims of "Tlaula" were sacrificed in Tenochtitlan.

Conquests in the Matlatzinca zone (Nos. 1, 2[?], 3, 5, 8[?], 15[?], 16[?], 21, 24, 25) are reported in the Códice Chimalpopoca, the Anales de Tlatelolco, the Colección de Mendoza, and Torquemada. The conquest of "Tlaula," however, is not confirmed by other sources; its identification is discussed in foot note 11, map 15.

[16] The Codex Telleriano-Remensis reports that the Mexicans went to Zinacantepec to obtain sacrificial victims. Conquests in this same general Matlatzinca zone, during the reign of Tizoc, are confirmed by other sources (see footnote 15, above).

[17] This campaign likewise was designed to obtain victims for sacrifice. In this instance, Tezozomoc uses "Cuextlan" to designate the Huasteca who helped defend Metztitlán against Mexican aggression.



Map 17.—Mexican wars: Ahuizotl (1486–1502).

(For legend, see pp. 305–309.)

Legend to map 17

Mexican wars: Ahuizotl (1486–1502). See legend to map 10.

Key No.	Source pueblo	Page	Pueblo identification
	Códice Chimalpopoca:		
1	Cozcaquauhtenancas [1]	57	Cuautenango, México.
2	Tlappanecas [1]		Tlapa, Guerrero.
3	Tziuhcohuacas [1]		Chicontepec, Veracruz.
4	Mictlanquauhtlatlaca [1, 2]		"Mictlanquauhtla," Veracruz.
5	Chiappanecas [1]	58	Chapa de Mota, México.
	Cozcaquauhtenancas [1]		See 1.
	Tzicoac [1]		See 3.
6	Xicochimalcas [1]		Jico Viejo, Veracruz.
7	Ayotochcuitlatlan [1, 2]		Cuicatlán, Oaxaca.
8	Xaltépec [1]		Jaltepec de Candayoc, Oaxaca.
9	Tliltépec [3]		San Miguel Tiltepec, Oaxaca.
10	Xochtlan [4]		Juchitán de Zaragoza, Oaxaca.
11	Tequantépec [4]		Santo Domingo Tehuantepec, Oaxaca.
12	Amaxtlan [4]		Amatitlán, Oaxaca.
	Xaltepecas [1]		See 8.
	Tlappan	67	See 2.
	Tziuhcoac		See 3.
13	Mollanco		Molango, Hidalgo.
14	Tzapotlan		Zaachila, Oaxaca, formerly "Teozapotlan."
	Xaltépec		See 8.
15	Tototépec		San Pedro Tututepec, Oaxaca.
	Xochtlan		See 10.
	Amaxtlan		See 12.
	Chiyappan		See 5.
	Cozcaquauhtenanco		See 1.
16	Xollochiyuhyan		Joluchaca, Guerrero, formerly "Joluchuca."
17	Coçohuipillan		La Huipililla, Guerrero.
18	Coyócac		Coyuquilla, Guerrero.
19	Apancallecan [5]		
20	Xiuhtlan		Chutla, Guerrero.
21	Acatlyyacac [6]		Acatepec, Guerrero.
22	Acapolco		Acapulco de Juárez, Guerrero.
23	Totollan [7]		San Jerónimo Sosola, Oaxaca.
24	Tecpantépec		Tecpan de Galeana, Guerrero.
25	Nexpan		Nexpa, Guerrero.
26	Istactlallocan [8]		
27	Teocuitlatlan [9]		
28	Teopochtlan [10]		
	Xicochimalco		See 6.
29	Cuauhxayacatitlan [11]		
30	Coyolapan		Coyulapa, Puebla.
31	Cuauhnacaztitlan [12]		
32	Cuetzalcuitlapillan [12]		
33	Izhuatlan		San Francisco Ixhuatán, Oaxaca.
34	Çihuatlan [13]		"Ciguatlan," Guerrero.
35	Huehuetlan [13]		Huehuetán, Guerrero, or Huehuetán, Chiapas.
36	Huitztlan [13]		Huixtla, Chiapas, or "Huiztlan," Guerrero.
37	Xolotlan [13]		Soconusco, Chiapas, or Joluta, Guerrero.
38	Maçatlan [13]		Santa Cruz Mazatán, Oaxaca, or Mazatlán, Guerrero.
39	Huipillan [14]		
	Tequantépec		See 11.
	Ayotochcuitlatlan		See 7.
40	Cuauhtlan		Huautla de Jiménez, Oaxaca.
41	Mizquitlan		San Francisco, Oaxaca, formerly "Mezquititán."
42	Tlacotépec		Tlacotepec Plumas, Oaxaca.
43	Cuappilollan		Coapiloloya, Veracruz.
	Anales de Tlatelolco:		
44	Tlatlauhqui ycxi [15]	17	Tlatlacxoquico, Veracruz.
	Molanco		See 13.
	Tzapotitlan		See 14.
	Xaltépec		See 8.

See footnotes on page 309.

Legend to map 17—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Anales de Tlatelolco—Continued		
45	Pantlanala	17	Patlanalán, Puebla.
	Xochtla		See 10.
	Amaxatla		See 12.
46	Yauhtépec [16]		San Bartolo Yautepec, Oaxaca.
	Cozcaquauhtenanco		See 1.
	Xolochiuhcan		See 16.
	Tzohuilpillan		See 17.
	Coyócac		See 18.
	Acalecan		See 19.
	Xiuiztlauacan		See 20.
	Acatépec		See 21.
	Acapolco		See 22.
	Icxolotlan [17]		
	. . . pec		See 24.
	Nexpan		See 25.
	Iztac tlalocan		See 26.
	Teocuitlatlan		See 27.
	Tzotzollan		See 23.
	Xiconchimalco		See 6.
	Quauhxayancantihuayan		See 29.
	Coyolloapan		See 30.
	Nacazquauhtla		See 31.
	Cuezalcuitlapilco		See 32.
	Izhuatla		See 33.
	Ciuatlan		See 34.
	Ueuetlan		See 35.
	Uitztla		See 36.
	Xolotla		See 37.
	Mazatlan		See 38.
	Uipillan		See 39.
	Tecuantépec		See 11.
	Ayotochcuitlatlan		See 7.
	Izatochco [18]		See 7.
	Cuitlatlan [18]		See 7.
	Quauhiztla [19]		See 40.
	Uizquitlan [20]		See 41.
	Tlacotépec		See 42.
	Quauhpilloyan		See 43.
	Tziuhcouacan [21]	60	See 3.
	Coyolapaneca [21]		See 30.
	Cozcaquauhtenanca [21]		See 1.
	Chiapaneca [21]		See 5.
	Amaxteca [21]		See 12.
	Xochintlantlaca [21]		See 10.
	Tequantépec [21]		See 11.
	Apanecan [21]		See 19.
	Colección de Mendoza:		
	Tziccoac	5: 48	See 3.
	Tlappan		See 2.
	Molanco		See 13.
	Amaxtlan		See 12.
	Çapotlan		See 14.
	Xaltepec		See 8.
	Chiapan		See 5.
	Tototepec		See 15.
	Xochtlan		See 10.
	Xolochiuhyom		See 16.
	Cozcaquauhtenanco		See 1.
	Coçohuipilecan		See 17.
	Coyuca		See 18.
	Acatepec		See 21.
	Huexolotlan		See 37.
	Acapulco		See 22.
	Xiuhhuacan		See 20.
	Apancalecan		See 19.
	Tecpatepec		See 24.
47	Tepechiapa [22]		
	Xicochimilco [1]		See 6.

See footnotes on page 309.

Legend to map 17—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Colección de Mendoza—Continued		
48	Xiuhtecçacatlan [23]	5:48	
	Tecuantepec		See 11.
	Coyolapan		See 30.
	Yztactlealocan		See 26.
	Teocnitlatla		See 27.
	Huehuetlan		See 35.
	Quauhxayacatitla		See 29.
	Yzhuatlan		See 33.
49	Comitlan		Comitán, Chiapas.
50	Nantzintlan		Nanzintla, Guerrero.
	Huipilan		See 39.
51	Cahualan [24]		
52	Yztatlan [24]		
	Huitzlan		See 36.
	Xolotlan		See 37.
	Quauhnacaztlan		See 31.
	Maçatlan		See 38.
	Ayauhtochcintlatla	5:49	See 7.
	Quauhtlan		See 40.
	Cueçalcintlapila		See 32.
53	Mapachtepec		Mapastepec, Chiapas.
	Quauhpilola		See 43.
	Tlacotepec		See 42.
	Mizquitlan		See 41.
	Codex Telleriano-Remensis:		
	Thiapa (Cabellilotepec)	5:152	See 5.
	Cuzcaquatenango		See 1.
54	Atliçapa	1:153	Atizapán de Zaragoza, México.
	Icxico [25]		See 6.
	Chimalco [25]		See 6.
55	Mictla		San Pablo Villa de Mitla, Oaxaca.
	Teutzapotlan		See 14.
56	Cultepec		Sultepec de Pedro Ascencio Alquisiras, México.
	Torquemada:		
57	Maçahuas [26]	1:186	
	Tziuhcoacas [27]		See 3.
58	Tocpanecas [27]		Tuxpan, Veracruz.
	Tzapotecas		See 14.
	Tlacupan [28]		See 2.
59	Cuextlan [29]	1:187	
60	Chinantla [30]		
	Coyotlapanecas		See 30.
	Cuzcaquahtenancas		See 1.
	Quappilollan		See 43.
	Cueçalcuitlapillan [31]		See 32.
	Quauhtla		See 40.
61	Quimichtlan	1:191	Quimixtlán, Puebla.
	Mizquitlan		See 41.
62	Atlixco [32]		Atlixco, Puebla.
	Izquixuchitecas	1:192	See 10.
	Amaxtecas		See 12.
	Tecuantepec		See 11.
63	Tlacuilollan	1: 193	Tlacolula de Matamoros, Oaxaca.
64	Huexotla		Huejutla, Hidalgo.
	Xaltepecas		See 8.
	Tezozomoc:[33]		
65	Chilocan [34]	273	Chiluca, México.
66	Xiquipilco	274	Jiquipilco el Viejo, México.
67	Cuahuacan		Santa María Magdalena, México, formerly "Cahuacán."
68	Zilla		Chila, México.
	Mazahuacan		See 57.
69	Xocotitlan		Jocotitlán, Guerrero.
	Chiapan	279	See 5.
70	Xilotepec		Jilotepec de Abasolo, México.
71	Tuzapan	294	"Tuzapan," Puebla.
	Tziuhcoac		See 3.
72	Tamapachco		Temapache, Veracruz.

See footnotes on page 309.

Legend to map 17—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Tezozomoc—Continued		
73	Teloloapan	342	Teloloapan, Guerrero.
74	Oztoman [34a]	344	"Oztuma," Guerrero.
75	Alahuiztlan		Alahuistlán Viejo, Guerrero.
	Xochtlan	356	See 10.
	Amaxtlan		See 12.
	Izhuatlan		See 33.
	Xolotlan		See 37.
76	Xoconuchco		Soconusco, Chiapas.
77	Coatzacualco		Puerto México, Veracruz.
	Chinantecatl [35]		See 60.
78	Ayotecatl		Ayutla, Guatemala.
79	Miahuatecas	359	San Andrés Miahuatlán, Oaxaca.
	Izhuatecas		See 33.
	Xolotlan		See 37.
	Maxtlan		See 12.
	Tehuantepec		See 11.
	Tecuantepec	362	See 11.
80	Tuxtecatl [36]		Santiago Tutla, Oaxaca, or Tuxtla Chico, Chiapas.
	Amaxtlan		See 12.
	Tehuantepec	364	See 11.
	Xochtlan		See 10.
	Amaxtlan		See 12.
	Tlacuilolan		See 63.
81	Acapetlahuacan		Acapetagua, Chiapas.
	Xoconuchco	370	See 76.
	Xolotecas		See 37.
	Ayotecas		See 78.
	Mazatecas		See 38.
	Xoconuchco	371	See 76.
82	Cozcatlan [37]		
	Tehuantepec [38]	373	See 11.
	Izhuatlan [38]		See 33.
	Xochitecas [38]		See 10.
83	Chiltepec [38]		
	Amaxtlan [38]		See 12.
	Mazatlan		See 38.
	Ayotecatl	374	See 78.
	Xolotlan		See 37.
	Xoconuchco		See 76.
	Códice en Cruz: [39]		
	Tziuhcohuac [39]	70	See 3.
	Tlapaneques [39]		See 2.
	Zapotecas [39]		See 14.
	Atlixco [39]	74	See 62.
	Teozapotlan [39]	75	See 14.
	Atlixco [39]	79	See 62.
	Ixtlilxochitl: [40]		
	Chinauhtla	2: 271	See 60.
	Coyolapan		See 30.
84	Hualtecpec		Yehualtepec, Puebla.
	Tlapan		See 2.
	Xoconochco		See 76.
	Xochtlan		See 10.
	Amaxtlan		See 12.
85	Tzapoteca [41]		
86	Mizteca alta [41]		
87	Mizteca baja [41]		
88	Chiapan [42]		
	Tzapotlan	2: 283	See 14.
	Xaltepec		See 8.
	Tliltepec		See 9.
	Tehuantepec		See 11.
	Amaxtlan		See 12.
	Xochitlan		See 10.
	Tequantepec	2: 289	See 11.
89	Amextloapan [43]		
	Xaltepec		See 8.

See footnotes on page 309.

Legend to map 17—Continued

[1] In all the cases to which footnote 1 applies, the Códice Chimalpopoca uses the expression, "they were destroyed"; this we have interpreted as destruction through conquest.

With the sole exception of the "Mictlanquauhtlatlaca" (No. 4), these conquests are confirmed elsewhere in the same source (p. 67), as well as by other data:

Cuautenango: Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis, Torquemada.

Tlapa: Colección de Mendoza, Torquemada, Ixtlilxochitl.

Chicontepec: Colección de Mendoza, Torquemada, Tezozomoc.

Chapa de Mota: Colección de Mendoza, Codex Telleriano-Remensis, Tezozomoc.

Jico: Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis.

Cuicatlán: Anales de Tlatelolco, Colección de Mendoza.

Jaltepec: Anales de Tlatelolco, Colección de Mendoza, Torquemada, Ixtlilxochitl.

[2] "Mictlanquauhtla" has been placed on our map in approximately the same position it occupies on a sixteenth-century map (No. 57, Colección Orozco y Berra); this general location is confirmed by the Epistolario (14: 82) and by Sahagún (4: 26, 28, 134).

The identification of "Ayotochcuitlatlan" is doubtful. Barlow (1947 a) and Meade (p. 300) place the town in the Huasteca, undoubtedly because of a comment of Lorenzana (ftn. 1, p. 342). Nevertheless, the fact remains that this pueblo appears consistently in association with settlements in modern Oaxaca and adjacent Veracruz, for which reason we prefer to identify it with modern Cuicatlán.

[3] The Códice Chimalpopoca reports war with Tiltepec which resulted unhappily for the Triple Alliance; nevertheless, Ixtlilxochitl lists the pueblo as a conquest.

[4] The Spanish translation of the Códice Chimalpopoca uses the expression, "se despobló con pestilencia." This we have interpreted as war rather than disease (cf. Barlow, 1947d, p. 521). As a matter of fact, the three conquests are amply confirmed by other data:

Juchitán: elsewhere in the same source (p. 67), Anales de Tlatelolco, Colección de Mendoza, Torquemada, Tezozomoc, Ixtlilxochitl.

Tehuantepec: Anales de Tlatelolco, Colección de Mendoza, Torquemada Tezozomoc, Ixtlilxochitl.

Amatitlán: elsewhere in the same source (p. 67), Anales de Tlatelolco, Colección de Mendoza, Torquemada, Tezozomoc, Ixtlilxochitl.

[5] We have identified "Apancallecan" and "Apanecan" (see footnote 21, below) with old "Atechancaleca" (Suma, No. 852) which, during the sixteenth century, was 2 leagues from Zacatula, in a zone where the Códice Chimalpopoca reports various conquests. In the Anales de Tlatelolco and the Colección de Mendoza, this pueblo appears in association with settlements in modern Guerrero, as it does likewise in the Matrícula de tributos (5: 73).

[6] "Acatlyyacac" (Códice Chimalpopoca) evidently corresponds to Acatépec (Anales de Tlatelolco), and thus has been identified with modern Acatepec, in Guerrero.

[7] "Totollan" evidently is equivalent to "Tzotzollan" of the Anales de Tlatelolco; both have been identified with modern Sosola, in Oaxaca.

[8] Not identified and not shown on the map. "Tlalocan" was the name of the land of the Olmeca, the "Uixtotin" and the Mixteca (Sahagún 3: 133–134).

[9] Not identified; the Matrícula de tributos (5: 79–80), has it associated clearly with pueblos in the Oaxaca area. It is queried on our map.

[10] This might be "Puetlan," which appears in the Matrícula de tributos (5: 81–82), together with other pueblos in the general vicinity of modern Jico, in Veracruz. It is queried on our map.

[11] Not identified; in view of its association with Jico Viejo and Coyulapa, the location should be near the Puebla-Oaxaca-Veracruz border as shown on our map.

[12] Not identified; presumably in the Isthmus of Tehuantepec area as shown on our map.

[13] "Çihuatlan" and "Huitztlan" may be located in modern Guerrero, on the basis of data in the Suma (Nos. 901, 857 respectively); although for the latter pueblo, an alternative identification (see next paragraph) is equally possible.

Except for "Çihuatlan," all these settlements might be located either in coastal Guerrero or Oaxaca-Chiapas. The Matrícula de tributos (5: 83) suggests that "Huehuetlan," "Huitztlan," and "Maçatlan" lie in the Chiapas area. Tezozomoc (pp. 356, 370, 374) places both "Mazatlan" ("Maçatlan") and "Xolotlan" in Chiapas. On the map, both possibilities are shown, each questioned.

[14] Not identified and not shown on map. However, if the associated pueblos (Nos. 34–38) are situated in modern Guerrero identification with La Huipililla (No. 17) is not unlikely.

[15] See footnote 10, map 16.

[16] Not mentioned in other sources. The name agrees with that of Yautepec, Morelos, but we are inclined to identify the pueblo with San Bartolo Yautepec, Oaxaca, since Ahuizotl was noticeably active in this region.

[17] Not identified; perhaps merely a repetition of "Xolotlan" (No. 37) of the other sources.

[18] Obviously a repetition of "Ayotochcuitlatlan," No. 7, with the name split.

[19] Evidently "Quauhiztla" equates with "Cuaubtlan," since the two pueblos occupy corresponding positions in the lists of the Códice Chimalpopoca and the Anales de Tlatelolco.

[20] We equate "Uizquitlan" and "Mizquitlan," since they appear in corresponding positions in the Códice Chimalpopoca and the Anales de Tlatelolco.

[21] In this passage, the Anales de Tlatelolco do not state clearly that these pueblos were conquered, but elsewere (p. 17) the same source lists Nos. 1, 10–12, 19, and 30 among the conquests. Furthermore, there is confirmation by other sources:

Coyulapa: Códice Chimalpopoca, Colección de Mendoza, Ixtlilxochitl.

Cuautenango, Chicontepec, Chapa de Mota: see footnotes 1, 2, above.

Amatitlán, Juchitán, Tehuantepec: see footnote 4, above.

"Apanecan": Codice Chimalpopoca, Colección de Mendoza; see footnote 5, above.

[22] Not located; the associated pueblos suggest either modern Guerrero or the vicinity of Jico Viejo, in Veracruz. Both possibilities are shown queried on our map.

[23] Not identified; listed between "Xicochimilco" and "Tecuantepec," hence a location either in Veracruz or Oaxaca is likely. Again, both possibilities appear on the map.

[24] Not located on map; both pueblos should be situated either in Guerrero or in Chiapas.

[25] Manifestly a division of the name, "Xicochimalco" (No. 6).

[26] See footnote 11, map 10.

[27] Torquemada places the "Tziuhcoacas" and "Tocpanecas" in the "Provincia y Reinos de Xalisco." This, together with the fact that Veytia has "Quiahuixtlan," presumably the Totonac center of Veracruz, in the general vicinity of Jalisco, leads one to suspect that during the sixteenth century, part of Veracruz was known as Jalisco (cf. ftn. 33, p. 16). In any case, "Tziuhcoacas" and "Tocpanecas" evidently are to be identified respectively with Chicontepec (ftn. 33, p. 267) and Tuxpan.

[28] The "Tlacupan" of Torquemada apparently refers to Tlapa (ftn. 55 p. 275).

[29] See footnote 27, map 14; footnote 37, p. 269.

[30] See footnote 25, map 14. The pueblo appears, queried on our map.

[31] Torquemada (1: 187) writes thus: "Cueçalcuitlapillan, Provincia grande de Gente, y mui Valientes, y haciendoles Guerra no pudo vencerlos . . . ." Nevertheless, the pueblo appears among the conquests in the Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza.

[32] Torquemada mentions war, but not conquest. Dibble's dubious interpretation of the Códice en Cruz similarly suggests war with Atlixco.

[33] Tezozomoc's account of the campaigns of Ahuizotl, particularly in the Tehuantepec area, is extremely confused. The same pueblo names are repeated so frequently, in the course of different wars, that the impression is of no more than a series of raids for booty.

[34] Chiluca does not appear as conquered; it was a concentration point for the Mexican forces in a campaign directed against the Otomí zone in the present State of Mexico.

[34a] See footnote 19, map 14.

[35] Tezozomoc appears to refer not to an individual pueblo, but to the people known as Chinantec (see footnote 25, map 14).

[36] "Tuxtecatl" might be identified with either of the pueblos indicated, one in Oaxaca, the other in Chiapas. Both possibilities appear on the map.

[37] Not identified; evidently located somewhere in the Isthmus of Tehuantepec zone as our map indicates.

[38] According to Tezozomoc, these pueblos were prior conquests; they sent embassies to pay tribute and to reiterate their submission to Ahuizotl. "Chiltepec" alone is not identified and does not appear on our map.

[39] Dibble's interpretations of the Códice en Cruz are far from secure. War is implied by the sacrifice of victims of Chicontepec, Tlapa, and from the Zapoteca zone, and such hostilities are confirmed by other data:

Chicontepec and Tlapa: see footnote 1, above.

Zapoteca: Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis, Torquemada, Ixtlilxochitl.

Dibble's interpretation of "Teozapotlan" obviously is more doubtful than any of the others, since he indicates that the glyph bears little resemblance to that of the pueblo with which he identifies it. His interpretation of war with Atlixco has been mentioned above (ftn. 32).

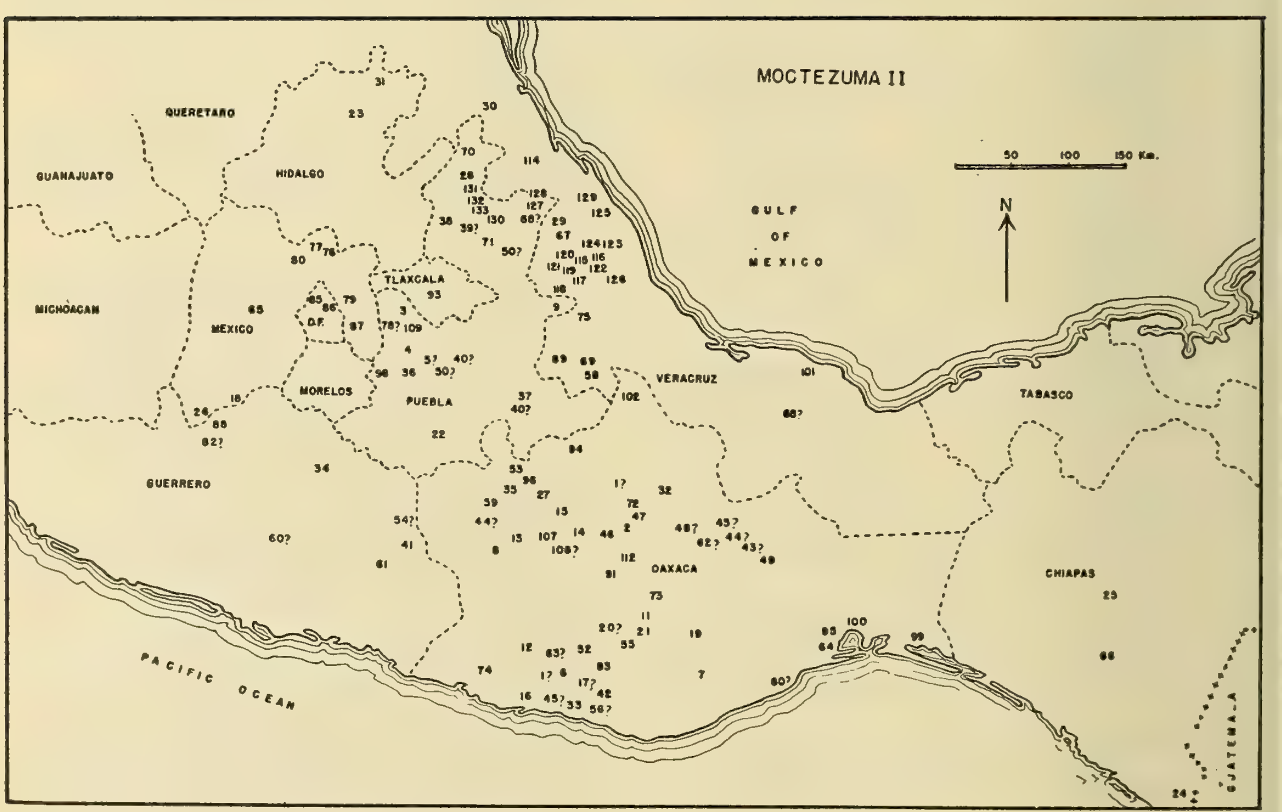
[40] According to Ixtlilxochitl, Netzahualpilli engaged in a campaign against Nautla, with the result that Texcoco gained control of "la tierra baja de los totonaques." The Nautla war is confirmed by the Códice en Cruz (pp. 69–70). In addition, Ixtlilxochitl (2: 272) mentions a campaign occasioned by a rebellion in Chicontepec, as well as war with Atlixco.

These three campaigns are attributed to Texcoco by Ixtlilxochitl. Nevertheless, the Spaniards found a Mexican garrison in Nautla, which implies either Mexican participation in the conquest, or a subsequent shift in control, from Texcoco to Tenochtitlan.

[41] Previous references to Zapotecas (Torquemada, Códice en Cruz) appear to apply to a pueblo (No. 14). Ixtlilxochitl refers to the province, namely the area occupied by the Zapoteca, in modern Oaxaca. The Mixteca alta and the Mixteca baja refer to the zones peopled by the Mixteca, likewise in Oaxaca, but extending into southern Puebla.

[42] In this case, Ixtlilxochitl clearly is speaking of the region known at present as Chiapas.

[43] Not identified. Ixtlilxochitl places this pueblo in the Tehuantepec area, remarking that it was "una de sus ciudades mas populosas y ricas."



Map 18.—Mexican wars: Moctezuma II (1502–20).

(For legend, see pp. 311–317.)

Legend to map 18

Mexican wars: Moctezuma II (1502–20). See legend to map 10.

Key No.	Source pueblo	Page	Pueblo identification
	Códice Chimalpopoca:		
1	Teuctépec [1, 2]	60	"Teotepec," Oaxaca.
2	Itztitlan [1]		Ixtlán de Juárez, Oaxaca.
3	Huexotzinco [3]		Huejotzingo, Puebla.
4	Atlixco [3]		Atlixco, Puebla.
5	Atzomiatenanco [3, 4]		[San Sebastián] Tenango, Puebla.
	Huexotzinco [3]		See 3.
6	Icpatépec	61	San Francisco Ixpantepec, Oaxaca.
7	Izquixochitépec [5]		San Miguel Suchiltepec, Oaxaca.
8	Tlachquiyauhcas [5]		Santa María Asunción Tlaxiaco, Oaxaca.
9	Quimichtlan [5]		Quimixtlán, Puebla.
10	Iztactlallocan [5, 6]		
11	Macuilloctlan [5]		Ocotlán de Morelos, Oaxaca.
12	Centzontepecas [5]		Santa Cruz Zenzontepec, Oaxaca.
12a	Texoquauhtli [6a]	63	
13	Achiyotlan	67	San Miguel Achiutla, Oaxaca.
14	Çoçollan		San Jerónimo Sosola, Oaxaca.
	Teuhtépec		See 1.
15	Nocheztlan		Asunción Nochixtlán, Oaxaca.
16	Tototépec		San Pedro Tututepec, Oaxaca.
17	Tlanitzlan [7]		
18	Çoltépec		Sultepec de Pedro Ascencio Alquisiras, México.
	Icpatépec		See 6.
	Izquixochitépec		See 7.
19	Quiyauhtépec		San Bartolo Yautepec, Oaxaca.
20	Chichihualtatacallan [8]		Santa Marta Chichihualtepec, Oaxaca.
21	Texotlan		Ejutla de Crespo, Oaxaca.
22	Piyaztlan		Piaxtla, Puebla.
23	Ollan [9]		Molango, Hidalgo.
24	Huitztlan		Huixtla, Chiapas.
25	Tzinacatlan		Zinacantán, Chiapas.
26	Tlatlayan		Tlatlaya, México.
27	Yancuitlan		Santo Domingo Yanhuitlán, Oaxaca.
28	Xicotépec		Villa Juárez, Puebla, formerly "Xicotepec."
29	Toztépec		Toxtepec, Veracruz.
30	Micquetlan		Mequetla, Veracruz.
31	Huexollotlan		Huejutla, Hidalgo.
32	Tliltépec		San Miguel Tiltepec, Oaxaca.
33	Nopallan		Santos Reyes Nopala, Oaxaca.
34	Tlalcoçauhtitlan		Tlalcozotitlán, Guerrero.
35	Texopan		Santiago Tejúpam, Oaxaca.
36	Itzyoyocan [10]		Teyuca, Puebla.
37	Caltépec		Caltepec, Puebla.
38	Panco		Pancoac, Puebla.
39	Tlochiyauhtzinco [11]		Tlayehualancingo, Puebla.
40	Teochiyappa [12]		San José Chiapa, Puebla, or Chiapa, Puebla.
	Tlachquiyauhco		See 8.
41	Malinaltépec		Malinaltepec, Guerrero.
42	Quimichtépec	68	San Pedro Mixtepec, Oaxaca.
	Centzontépec		See 12.
43	Quetzaltépec [12a]		San Miguel Quetzaltepec, Oaxaca.
44	Cuezcomayxtlahuacan [13]		San Andrés, San Pedro, or Santiago Ixtlahuaca, Oaxaca.
45	Çacatépec [14]		Santa María Zacatepec, Oaxaca, or Santiago Zacatepec, Oaxaca.
46	Xallapan [15]		San Raymundo Jálpam, Oaxaca.
47	Xaltianquizco		Santa María Jaltianguis, Oaxaca.
48	Yolloxonecuillan [16]		
49	Itzcuintépec		Santiago Ixcuintepec, Oaxaca.
	Iztitlan		See 2.

See footnotes on pages 316 and 317.

Legend to map 18—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Anales de Tlatelolco:		
50	Tlatlauhquitépec [17]	17	Tlatlauquitepec, Puebla, or La Magdalena Tlatlauquitepec, Puebla.
	Tzotzollan		See 14.
51	Atl . . .[18]		
	Tecuictépec		See 1.
	Nocheztlan		See 15.
	Totépec		See 16.
	Tlaniztla		See 17.
52	Tzolla		San Francisco Sola, Oaxaca.
	Icpatépec		See 6.
53	Tlalotépec [19]	18	Tlacotepec Plumas, Oaxaca.
	Chichiueltatacalan		See 20.
	Texotla		See 21.
	Piaztlan		See 22.
	Mollanco		See 23.
	Uitztlan		See 24.
	Tziuactlan [20]		See 25.
54	Tlachinollan [21]		"Tlachinola," Guerrero.
55	Amoxtlan		San Luis Amatlán, Oaxaca.
	Xicotépec		See 28.
	Toztépec		See 29.
	Mictlan [22]		See 30.
	Uexotlan		See 31.
	Tiltépec		See 32.
	Nopallan		See 33.
56	Tezon quauhtla [23]		
57	Teconpatlan [24]		
58	Tecpantlayácac [24]		Tecpatla, Veracruz.
	Caltépec tepepan		See 37.
	Teoátl ypantzinco [25]		See 39(?).
59	Tlacaxolotlan		Joluxtla, Oaxaca.
	Achtlachinollan		See 54.
60	Mazatlan [26]		Santa Cruz Mazatán, Oaxaca, or Mazatlán, Guerrero.
	Ciuatlan [20]		See 25(?).
	Tlachquiyauhco		See 8.
	Malinaltépec		See 41.
	Quichtépec		See 42.
	Cenzontépec		See 12.
	Quiciltépec		See 43.
	Cuezcoma [27]		
	Ixtlauacan [27]		See 44.
61	Citlaltépec		Zitlaltepec, Guerrero.
	Xalpan		See 46.
	Xaltiaquizco		See 47.
	Yolloxonecuillan		See 48.
62	Izceuitépec [28]		
	Izcuintépec		See 49.
	Iztitlan		See 2.
	Achioteca [29]	61	See. 13.
	Cozolteca [29]		See. 14.
	Tecuhtepeca [29]		See 1.
	Amantlatlaca [29]		See 55.
	Icpactepeca [29]		See 6.
63	Tózac [30]		
	Cuezcoma ixtlauaque [29]		See 44.
	Uexotzinca [3]		See 3.
	Istac tlallocan [29]		See 10.
	Colección de Mendoza:		
	Achiotlan	5: 49	See 13.
	Çoçolan		See 14.
	Nochiztlan		See 15.
	Tecutepec		See 1.
	Çulan		See 52.
	Tlaniztlan		See 17.

See footnotes on pages 316 and 317.

Legend to map 18—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Colección de Mendoza—Continued		
64	Huilotepec	5: 49	San Pedro Huilotepec, Oaxaca.
	Ycpatepec		See 6.
	Yztactlalocan		See 10.
	Chichihualtatacala		See 20.
65	Tecaxic [31]		Tecaxic, México.
	Tlachinoltic		See 54.
66	Xoconochco	5: 50	Soconusco, Chiapas.
	Çinacantlan		See 25.
	Huiztlan		See 24.
	Piaztlan		See 22.
	Molanco		See 23.
	Caquantepec		See 45.
67	Pipiyoltepec		Pilhuatepec, Veracruz.
68	Hueyapan [32]		Hueyapan, Puebla, or Hueyapan, Veracruz
	Tecpatlan		See 58.
69	Amatlan		Amatlán, Veracruz.
	Caltepec		See 37.
70	Pantepec		Pantepec, Puebla.
	Teoacinco [33]		See 39 (?).
71	Tecoçauhtla		Zautla, Puebla.
	Teochiapan		See 40.
	Çacatepec		See 45.
	Tlachquiyahuco		See 8.
	Malinaltepec		See 41.
	Quimichtepec		See 42.
	Yzcuintepec		See 49.
	Çençontepec		See 12.
	Quetzaltepec		See 43.
	Cuezcomayxtlahuacan		See 44.
	Huexolotlan		See 31.
	Xalapan		See 46.
	Xaltianquizço		See 47.
	Yoloxpuecuila		See 48.
72	Atepec		San Juan Atepec, Oaxaca.
73	Mictlan		San Pablo Villa de Mitla, Oaxaca.
	Yztitlan		See 2.
	Tliltepec		See 32.
74	Comaltepec		Santa Elena Comaltepec, Oaxaca.
	Çitlaltepec		See 61.
75	Quauhtochco		Huatusco de Chicuéllar, Veracruz.
76	Tzonpanco		Zumpango de Ocampo, México.
77	Xaltocan		Jaltocán, México.
78	Huaca [34]		
	Yzteyocan		See 36.
79	Acalhuacan [35]		Texcoco de Mora, México.
80	Coatitlan		Cuautitlán de Romero Rubio México.
81	Huixachtitlan [36]		
	Çoçolan		See 14.
82	Poctepec [37]		Pochote, Guerrero.
83	Coatlayauhcan		San Francisco Coatlán, Oaxaca.
84	Acolnahuac [38]		
85	Puputlan		Popotla, Tacuba, D. F.
86	Yztacalco		Ixtacalco, Ixtapalapa, D. F.
87	Chalcoatenco [38a]		Chalco de Díaz Covarrubias, México.
88	Oztoma [38b]	5: 51	"Oztuma," Guerrero.
89	Atzacan		Atzacan, Veracruz.
90	Atlan [39]		
	Xoconochco		See 66.
91	Tecapotitlan		Zaachila, Oaxaca, formerly "Teozapotlan."
	Historia de los mexicanos por sus pinturas:		
	Zozola	231	See 14.
	Codex Telleriano-Remensis:		
92	Mixteca [40]	5: 154	
	Cozola		See 14.
	Ycpaltepec		See 6.
	Quimichintepec		See 42.
	Nopala		See 33.
	Tototepec		See 16.

See footnotes on pages 316 and 317.

Legend to map 18—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Codex Telleriano-Remensis—Continued		
	Hayocingo	5: 155	See 39.
	Ytzlaquetlaloca		See 10.
	Torquemada:		
	Atlixco [3]	1: 195	See 4.
	Tlachquiauhco	1: 196	See 8.
	Malinal	1: 197	See 41.
	Achiotlan		See 13.
93	Tlaxcala [41]	1: 201	Tlaxcala, Tlaxcala.
94	Quauhnelhuatlan	1: 204	Huautla de Jiménez, Oaxaca.
	Provincias Mixtecas	1: 207	See 92.
95	Tecuantepec		Santo Domingo Tehuantepec, Oaxaca.
96	Cohuaixtlahuacan		San Juan Bautista Coixtlauaca, Oaxaca.
	Tçoçolan		See 14.
	Tixtecas	1: 208	See 2.
	Huauhtlan		See 94.
	Tototepec		See 16.
	Tecuantepec	1: 209	See 95.
97	Yopitçinco [42]		
	Itztecas	1: 210	See 2.
	Itzcuintepecas		See 49.
	Atlixco [3]		See 4.
	Tecuhtepec		See 1.
	Çollan	1: 211	See 52.
	Mictlan		See 73.
98	Quauhquecholla		Huaquechula, Puebla.
	Huexotzincas [3]		See 3.
99	Amatlan		Amatitlán, Oaxaca.
	Icpatepecas	1: 213	See 6.
	Malinaltepec		See 41.
100	Izquixochtlan		Juchitán de Zaragoza, Oaxaca.
	Tlaxcaltecas		See 93.
	Huexotzincas [3]		See 3.
	Atlixco [3]		See 4.
	Xuchitepecas	1: 214	See 7.
	Icpactepecas		See 6.
	Tlachquiauhco	1: 215	See 8.
	Yopitzincas		See 97.
	Nopallan		See 33.
101	Quatzalapan		Cuetzalapan, Veracruz.
102	Cihuapohualoyan [43]		"Cihua," Oaxaca.
	Cuezcomaixtlahuacan		See 44.
	Quetzaltepec [44]		See 43.
	Iztactlalocan	1: 216	See 10.
103	Guatemala [45]	1: 218	
104	Niçaragua [45]		
105	Verapaz [45], [46]	1: 219	
	Centzontepec	1: 228	See 12.
	Tlaxcaltecas [41]		See 93.
106	Maçatzintla [47]		
	Çacatepecas		See 45.
	Tezozomoc:		
	Nopallan	403	See 33.
	Icpactepeccas		See 6.
107	Xaltepec	420	Magdalena Jaltepec, Oaxaca.
108	Cuatzonteccan [48]		
	Tututepec	429	See 16.
	Quetzaltepec		See 43.
	Huexotzinco [3]	438	See 3.
109	Cholula [3]		Cholula de Rivadabia, Puebla.
	Atlixco [3]		See 4.
	Yanhuitecas	447	See 27.
	Zozolan	448	See 14.
	Tuctepec	454	See 1.
	Coatlan		See 83.
	Tlaxcala [41]	474	See 93.
	Tlachquiauhco	491	See 8.

See footnotes on pages 316 and 317.

Legend to map 18—Continued

Key No.	Source pueblo	Page	Pueblo identification
	Códice en Cruz:		
	Caltepec [50]	84	See 37.
	Xaltianquizco [49], [50]		See 47.
	Tlachco [49], [50]		See 8.
110	Tamoanchan [49], [50]	85	
	Huilotepec [49], [50]	104	See 64.
	Ycpactepec	105	See 6.
	Quetzaltepec [49], [50]	106	See 43.
	Tototepec [49], [50]		See 16.
	Tlaxcaltecas [41]	115	See 93.
	Ixtlilxochitl:		
	Zocolan	2: 309	See 14.
	Totepec		See 16.
	Atlixco [3]		See 4.
	Yopatepec [51]	2: 310	See 6.
	Mixtecas	2: 317	See 92.
111	Tzapotecas [52]		
	Yopicas		See 97.
	Tototepecas		See 16.
	Tequantepecas		See 95.
	Coixtlahuacan	2: 318	See 96.
	Zozolan		See 14.
	Tototepec		See 16.
	Tequantepec		See 95.
	Yopitzinco		See 97.
112	Huaxaca		Oaxaca, Oaxaca.
	Tlachquiauhco		See 8.
	Malinaltepec		See 41.
	Iztactlalocan		See 10.
	Izquixochitepec		See 7.
	Tlacotepec		See 53.
	Amantlan	2: 319	See 99.
	Tlaxcalan [41]	2: 322	See 93.
	Tetzcuco [53]	2: 331	See 79.
113	Tonacapan [54]	2: 333	
	Mitlantzinco		See 73.
	Xaltianquizco		See 47.
	Relación de Papantla:		
114	Papantla		Papantla, Veracruz.
	Relación de Jalapa (Paso y Troncoso):		
115	Chepultepec	5: 111	Chapultepec, Veracruz.
116	Tepetlan	5: 118	San Antonio Tepetlán, Veracruz.
117	Xalapa	5: 102–103	Jalapa Enríquez, Veracruz.
118	Yzguacan	5: 122	Ixhuacán de los Reyes, Veracruz.
119	Xilotepec [55]	5: 106	Jilotepec, Veracruz.
120	Tlaculula [56]	5: 108	Tlacolulan, Veracruz.
121	Quaquauzintlan [55]	5: 110	Coacoatzintla, Veracruz.
122	Naolingo	5: 112	Naolinco, Veracruz.
123	Acatlan [57]	5: 113	Acatlán, Veracruz.
124	Miaguatlan [57]	5: 114	San José Miahuatlán, Veracruz.
125	Colipa [57]	5: 115	Colipa, Veracruz.
126	Almoloncan [58]	5: 119	Almolonga, Veracruz.
	Relación de Jonotla (Paso y Troncoso):		
127	Xonotla [59]	5: 128	Jonotla, Puebla.
128	Ecatlan [59]	5: 140	Ecatlán, Puebla.
	Relación de Misantla:		
129	Miçantla [58]		Misantla Viejo, Veracruz.
	Relación de Hueytlalpan:		
130	Gueytlalpa [58]		Hueytlalpan, Puebla.
	Relación de "Matlatlan" y Chila:		
131	Matlatlan [58]		"Matlatlan," Puebla.
132	Chila [58]		Chila, Puebla.
	Relación de Jojupango:		
133	Jujupango [58]		Jojupango, Puebla.

See footnotes on pages 316 and 317.

Legend to map 18—Continued

[1] The Códice Chimalpopoca reports that "Teuctépec" and "Iztitlan" were depopulated through "pestilence," which we interpret as war (cf. footnote 4, map 17). Conquest of both pueblos is confirmed elsewhere in the same source (p. 67), as well as by other data:

"Teuctépec": Anales de Tlatelolco, Colección de Mendoza, Torquemada, Tezozomoc.

"Iztitlan": Anales de Tlatelolco, Colección de Mendoza, Torquemada.

[2] Although "Teotepec" apparently does not appear under this name in the 1930 census, it is shown in the Atlas geográfico. The latter places it on the coast of Oaxaca, a location which would accord with Tezozomoc. Nevertheless, the Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza give the impression that the pueblo was situated in north-central Oaxaca, near Sosola. Both possibilities, queried, appear on our map.

[3] These pueblos evidently were involved in war, although there is no report of conquest, except for Huejotzingo (Anales de Tlatelolco).

The Códice Chimalpopoca attributes the campaigns in question to Cuautitlán, despite the fact that the latter apparently was conquered by the Mexicans in the days of Acamapichtli (map 10, No. 11).

Torquemada mentions war with Atlixco and Huejotzingo, as does Tezozomoc, who includes Cholula for good measure; Ixtilxochitl speaks of war with Atlixco. But all these sources refer to the Triple Alliance. Accordingly, the pueblos are listed here, despite the fact that the Códice Chimalpopoca attributes the campaigns to Cuautitlán.

[4] Identification doubtful; it is suggested simply because Tenango falls within the zone affected by this campaign.

[5] The Códice Chimalpopoca does not attribute these campaigns definitively to Mexico, but there are confirmatory data. Except for "Iztactlallocan," Quimixtlán, and Ocotlán, corroboration is found elsewhere in the same source (pp. 67–68). For the two last-mentioned pueblos, there are no further data, but the others appear as conquests in various sources:

Ixpantepec: Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis, Torquemada, Tezozomoc, Códice en Cruz, Ixtlilxochitl.

Suchiltepec: Torquemada, Ixtlilxochitl.

Tlaxiaco: Anales de Tlatelolco, Colección de Mendoza, Torquemada, Tezozomoc, Ixtilxochitl.

"Iztactlallocan": Colección de Mendoza, Codex Telleriano-Remensis, Torquemada, Ixtlilxochitl.

Zenzontepec: Anales de Tlatelolco, Colección de Mendoza, Torquemada.

[6] See footnote 8, map 17.

[6a] Not identified and not shown on map; probably the same as "Tezon quauhtla" (Anales de Tlatelolco), in which case the pueblo should be located in modern Oaxaca (see footnote 23, below).

[7] Not identified; presumably in modern Oaxaca, at no great distance from the modern pueblos of Tututepec and Sola de Vega. Queried on map.

[8] Identification doubtful; based in part on associated pueblos and in part on the fact that "Chichihualtatacallan," or "chichihual-te-ta-calla" means "lugar de nodrizas" (Penafiel, p. 107), as does modern Chichihualtepec (Leduc et al, p. 253).

[9] We suspect that "Ollan" is Molango, since the two pueblos occupy comparable positions in the lists respectively of the Códice Chimalpopoca and the Anales de Tlatelolco.

[10] "Itzyoyocan" (Códice Chimalpopoca) appears to correspond to "Yzteyocan" (Colección de Mendoza); we have identified both with modern Teyuca.

[11] Identification doubtful; we suggest Tlayehualancingo, near Pancoac, with which latter the pueblo appears associated in the Códice Chimalpopoca. However, it likewise is associated with Caltepec (Anales de Tlatelolco) and with Pantepec and Zautla (Colección de Mendoza).

[12] In this instance, there are two possibilities, both pueblos known as Chipa, in modern Puebla. Both appear on the map with an interrogation point.

[12a] Identified, somewhat dubiously. Torquemada places the pueblo near "Cihuapohualoyan," which is securely located, thanks to a sixteenth-century map (footnote 43). However, Tezozomoc couples Quetzaltepec with Tututepec, which suggests coastal Oaxaca.

[13] Identification dubious; possibly, San Andrés, San Pedro, or Santiago Ixtlahuaca, the first two in eastern Oaxaca, the third in the western part of the State. Both possibilities are shown on our map.

However, it is by no means impossible that the pueblo in question should be located near Quetzaltepec, as Torquemada implies, when he remarks that those of "Cuezcomaixtlahuacan" fled from the Mexicans and took refuge in Quetzaltepec.

[14] Two possibilities, both in Oaxaca and both pueblos called Zacatepec, are shown on map 18.

[15] We equate "Xallapan" with "Xalpan," since the two pueblos occupy corresponding positions respectively in the lists of the Códice Chimalpopoca and the Anales de Tlatelolco. Both have been identified with modern Jálpam, in Oaxaca.

[16] Not identified; the associated pueblos suggest a location in modern Oaxaca. Queried on our map.

[17] Two possibilities, both in Puebla, and both pueblos called Tlatlauquitepec, are shown on the map.

[18] The name obviously incomplete.

[19] We assume that "Tlalotépec" (Anales de Tlatelolco) is the same as Tlacotepec (Ixtlilxochitl); both have been identified with modern Tlacotepec.

[20] It is evident that "Tziuactlan" and possibly "Ciuatlan." (Anales de Tlateloco) correspond to "Tzinacatlan" (Códice Chimalpopoca) and "Çinacantlan" (Colección de Mendoza); all have been identified with modern Zinacantán in Chiapas.

[21] Not identified, although approximate location is shown on the map, on the basis of data in the Suma (No. 725).

[22] "Mictlan" and "Micquetlan" evidently are equivalent; they occupy corresponding positions respectively in the lists of the Anales de Tlatelolco and the Códice Chimalpopoca; both have been identified with modern Mequetla, in Veracruz.

[23] Not identified; probably the same as "Texoquauhtli" (No. 12a) of the Códice Chimalpopoca (see footnote 6a, above). The association with Nopala (Anales de Tlatelolco) suggests a location in modern Oaxaca. Queried on our map.

[24] Possibly Nos. 57 and 58 represent variant spellings of the same name the latter, at least, may be identified with modern Tecpatla, in Veracruz.

[25] Not identified; unfortunately, at this point the lists of the Códice Chimalpopoca and the Anales de Tlatelolco do not run parallel, hence equivalents cannot be suggested. Nevertheless, association with Caltepec, suggests possible reference to the pueblo dubiously identified as Tlayehualancingo (No. 39).

[26] Two possibilities are suggested, one in Oaxaca and one in Guerrero; both are shown on map 18.

[27] Obviously "Cuezcomayxtlahuacan" (No. 44), with the name divided.

[28] Not identified; the associated pueblos suggest a possible location in modern Oaxaca. Queried on our map.

[29] The Anales de Tlatelolco use the expression, "perished," which we assume to indicate conquest. In any event, there are corroborative data:

Achiutla: Códice Chimalpopoca, Colección de Mendoza, Torquemada.

Sosola: elsewhere in the Anales de Tlatelolco (p. 17), Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas, Codex Telleriano-Remensis, Torquemada, Tezozomoc, Ixtlilxochitl.

"Teotepec:" see footnotes 1, 2, above.

Amatlán: elsewhere in the Anales de Tlatelolco (p. 18).

Ixpantepec: see footnote 5, above.

Ixtlahuaca: elsewhere in the Anales de Tlatelolco (p. 18) (see footnote 27, above), Códice Chimalpopoca, Colección de Mendoza, Torquemada. For identification see footnote 13, above.

"Iztactlallocan:" see footnote 5, above, and footnote 8, map 17.

[30] Not identified; queried on our map. The context (Anales de Tlatelolco) suggests a location in modern Oaxaca, not far from Sola. There is no definitive mention of conquest, but of rebellion and flight of population; the conquest is not confirmed in other sources.

[31] In the Colección de Mendoza, Tecaxic appears isolated. Probably it can be placed safely in the State of Mexico, on the basis of associated pueblos in the campaigns of Tizoc (map 16, No. 1).

[32] Two possibilities, both pueblos called Hueyapan, one in Puebla and one in Veracruz, are shown on the map. We incline toward the former, since the town appears on the list with "Pipiyoltepec" (No. 67), in Veracruz, close to the Puebla border.

[33] Not identified; association with Caltepec, Pantepec, and Zautla, suggests possible reference to dubiously identified Tlaychualancingo (No. 39) of the Códice Chimalpopoca. See footnotes 11 and 25, above.

[34] Not located; apparently to be sought in the modern State of Mexico, or along the Mexico-Puebla frontier. Queried on our map.

[35] See footnote 53, below, and footnote 4, map 11.

[36] Not located.

[37] See footnote 20, map 14.

[38] Not located.

[38a] See footnote 3, map 11.

[38b] See footnote 19, map 14.

[39] Not located. In the Matrícula de tributos (5:88), "Atlan" appears in such association as to suggest a location in northern Veracruz.

[40] See footnote 41, map 17. The Codex Telleriano-Remensis does not claim conquest of the Mixteca, but refers to an accident in which a large number of Mexican troops drowned, en route to that zone.

However, conquests in the Mixteca are attested by the Códice Chimalpopoca, the Anales de Tlatelolco, the Colección de Mendoza, the Codex Telleriano-Remensis itself, Torquemada, Tezozomoc, and Ixtlilxochitl.

[41] The sources mention war, but not conquest.

[42] Province located in the southern part of the modern state of Guerrero. Not shown on our map.

[43] Not identified with any modern pueblo; on our map it is shown in the same position it occupies on a sixteenth-century map (No. 57, Colección Orozco y Berra).

[44] In the passage cited, Torquemada does not claim Quetzaltepec as a conquest, although he does so later (1: 215–216). Confirmation is provided by the Códice Chimalpopoca, the Anales de Tlatelolco, the Colección de Mendoza, and Tezozomoc.

[45] Torquemada has the Mexicans penetrate Guatemala and Nicaragua, as does Ixtlilxochitl (2: 318). This alleged campaign remains vague, without details concerning individual pueblos or battles. In fact, the report is so unconvincing, that these "conquests" have not been entered on our map; and the territory mentioned in the passage of Ixtlilxochtil has not been included in our list of conquests, since his claims are bombastic and grandiose rather than specific.

[46] Verapaz refers to a sixteenth-century (Torquemada 2: 53) and modern area of Guatemala.

[47] Not identified, not shown on our map; Torquemada remarks vaguely that it lies in Chichimec territory.

[48] Not identified; the Tezozomoc text implies it may not be far from Jaltepec (map 18, No. 107), where we have placed it with an interrogation point.

[49] In a number of cases, Dibble's interpretations of the Códice en Cruz are extremely dubious. For example, the glyph for Jaltianguis shows human tracks instead of the sign for sand; that for Tlaxiaco is lacking the drops of water, which Dibble suggests may be effaced. With respect to "Tamoanchan," Dibble himself states that the interpretation cannot be defended. To boot, the conquest of Huilotepec is little more than a suggestion. The interpretation of conquest of Quetzaltepec and Tututepec is even more doubtful, since Dibble leans on other sources, without being able to demonstrate concrete evidence in the Códice en Cruz.

[50] The conquests of Caltepec, Jaltianguis, and Tlaxiaco are confirmed for the Triple Alliance, although the Códice en Cruz claims them for Texcoco:

Caltepec: Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza.

Jaltianguis: Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Ixtlilxochitl.

Tlaxiaco: see footnote 5 above.

With respect to the other pueblos the situation may be summarized as follows:

"Tamoanchan:" Not shown on our map. Meade (p. 89) identifies this pueblo with the ruins of "Tamtzan" or "Tamchan," in the Huasteca. Dibble suggests conquests in the Huasteca or Totonacapan may be intended.

Legend to map 18—Continued

As a matter of fact, at this time, there is slight indication of Mexican aggression in the Huasteca, although Mequetla (No. 30) probably lies on the borders of that province; on the contrary, map 18 indicates a wide range of conquests in northern Totonacapan.

Huilotepec: conquest confirmed by the Colección de Mendoza.

Quetzaltepec: see footnote 44, above.

Tututepec: conquest confirmed by Códice Chimalpopoca, Anales de Tlatelolco, Codex Telleriano-Remensis, Torquemada, Tezozomoc, Ixtlilxochitl.

[51] "Yopatepec" (Ixtlilxochitl) evidently corresponds to "Icpatepec" and "Icpaltepec" of the other sources; identification with Ixpantepec, in Oaxaca, is indicated.

[52] Not shown on our map. See footnote 41, map 17.

[53] Chavero (in Ixtlilxochitl, ftn. 1, 2: 331) states that other chronicles do not mention this war between Tenochtitlan and Texcoco; he considers it a fabrication to justify the alliance of the Texcocan leader, Ixtlilxochitl, with the Spaniards.

Nevertheless, the Colección de Mendoza lists "Acalhuacan" (No. 79) among the Mexican conquests. And with respect to the dispute which centered about the succession in Texcoco, Torquemada (1: 221–227) gives pretty much the same version as Ixtlilxochitl, describing active Tenochtitlan participation in this dynastic controversy.

[54] Obviously Totonacapan. Not shown on our map because a province rather than a pueblo. Ixtlilxochitl refers to the frequent uprisings against the Triple Alliance.

[55] The *relación geográfica* (Paso y Troncoso 5: 106, 110) states that Jilotepec and Coacoatzintla were subjected by Tlacolulan prior to their becoming tributaries of Moctezuma II.

[56] Tlacolulan was tributary to Mexico in the days of Moctezuma II. Although the corresponding *relación* does not date the conquest by the Mexicans, evidently it took place during the reign of the younger Moctezuma–for Jilotepec and Coacoatzintla (see preceding note) state that they were tributaries of Tlacolulan, until they were subjected by Moctezuma.

[57] Acatlán, Miahuatlán and Colipa evidently were conquered by Moctezuma II. The *relación* states merely that the same situation holds for them as for Naolinco, and the latter clearly was subjected by the younger Moctezuma.

[58] The respective sources indicate that these pueblos were tributaries of Moctezuma II, without stating when they passed under Mexican control. They do not appear in previous lists of conquests and have been entered on map 18, so as to give the panorama as a whole in the days of the younger Moctezuma. In any case, it seems highly probable that they were conquered at the same time as the other pueblos of the same region, that is, by Moctezuma II.

[59] See ftn. 59, p. 278.

APPENDIX C

VEGETATION

Most of this appendix is dedicated to the catalog of our herbarium collection, following which will be found a list, prepared by Modesto González, of the trees and lianas he considers characteristic of *monte alto.*

HERBARIUM CATALOG

In order to facilitate reference in the text, plant materials are listed numerically; following the catalog is an index to genera.

NUMERICAL LIST

Number and common Spanish (or hispanicized Mexican) name appear first, followed by (*a*) Totonac name, with translation in parentheses; (*b*) taxonomic determination, together with any data we may have concerning growth habits or local introduction; (*c*) utility; (*d*) informants; and (*e*) remarks.

In some cases, the Spanish name is not known to informants; in others, the Totonac name either is not known or was not recorded. Translation of the native name is given for some plants, but we rather slighted this aspect; with patience and a good informant, many more terms could be translated. Occasionally, informants know neither name nor use of certain plants; usually, specimens were collected regardless, since negative evidence often is of interest.

When several different individuals have been consulted and their information is at variance, each statement is followed by the initials of the informant. With three exceptions, the full names appear under *d*; but three friends assisted so frequently that they are cited by initials only: Modesto González (MG), María Loreto (ML), and Ana Méndez (AM).

Many specimens were collected in duplicate or in triplicate, at different times of the year; nevertheless, they appear under the same number. On the whole, Totonac classification accords well with that of the taxonomist and rarely do informants consider two different species one and the same plant. There is, however, one extreme case to the contrary (No. 202), in which plants of three distinct families were identified, by the same informant, upon different occasions, as one and the same. In justice, it must be said that he professed uncertainty, saying that he did not know the blossom, but that "the leaf looked the same."

In some cases, different specimens of the same species have been listed under separate numbers. This is particularly true when two different Spanish names were given. Moreover, as with the cottons, occasionally it appeared preferable to list individual specimens separately, since we were uncertain how distinct they would prove to be taxonomically. If all the data are in agreement, we have treated the plant under a single number, and the other numbers have been suppressed. For example, the same white-fibered cotton appears as Nos. 8, 12, 36, and 89, but our information concerning it has been summarized under No. 8.

Virtually all plant determinations have been made by Dr. Harold Emery Moore, Jr., of the Bailey Hortorium, and to him we are enormously indebted for a long and painstaking study of our sizable collection. As will be seen below, he has submitted a number of problematical specimens for independent determination or for confirmation.

1. *Cabellito de angel; flor de mechuda.*

a. ištutujún (*flor de chuparosa*).

b. *Calliandra houstoniana* (Mill.) Standl. Grows wild in *monte.*

c. No use.

d. MG, Rosalino González.

e. Same as No. 96.

2. *Cordoncillo.*

a. ¢oˀkote; sókot.

b. *Piper* sp., possibly *Piper berlandieri* C. DC. Grows wild; about same height as orange tree.

c. After childbirth, used in bath and parturient drinks a tea made from the root. Tea likewise drunk to prevent paleness (OV). Following childbirth, instead of water, woman drinks tea made from the boiled root. Boiled leaf serves as soap; bathers in sweat bath whip body lightly with branches (MG). Root or small branches cut in pieces and made into a tea; given parturient following ejection of afterbirth (MdL).

d. Otilia Villegas, MG, Manuel de la Luz.

3. Unknown to informant.

a. pulúš.

b. *Solanum verbascifolium* L. Volunteer in abandoned maize fields; not a *monte* plant.

c. Leaves used to scour dishes. Chili seed, artificially germinated prior to planting, wrapped in the leaves.

d. AM.

4. Unknown to informants.

a. pisís.

b. Araceae family, possibly *Xanthosoma* sp. Cultivated.

c. Edible corms a Lenten dish (p. 156).

d. AM, Otilia Villegas.

5. Unknown to informant.

a. čapáwate.

b. *Porophyllum ruderale* (Jacq.) Cass. Determined by S. F. Blake. Volunteer in maize field.

c. Edible (p. 161).

d. AM, ML.

6. *Yerba mora.*

a. mú¢tututi.

b. *Solanum nigrum* L.

c. Edible (p. 161) (AM, RG); not edible, once seeds have formed (ML). Also medicinal, as treatment for *disipela* ([*sic*] erysipelas? "Inflammation, skin turns red, feverish"). Entire plant ground, salt and lime juice added; three times a day, mixture applied as a compress, covered with castor leaf. In one case, effective when compress of eskúptamaʔ (No. 164) unsuccessful (ML).

d. AM, Rosalino González, ML.

7. Unknown to informant.

a. sinatuán.

b. *Schoepfia schreberi* Gmel. Grows wild.

c. As remedy, plant boiled, and pimples and boils (*granos*) bathed four times with liquid (OV). Woman 3 months pregnant bathes, either in house or sweat bath, with liquid in which leaf has been boiled; this informant not aware that plant is a remedy for pustules (MG).

d. Otilia Villegas, MG.

8. *Algodón.*

a. pánʌmakʔ (generic term); white lint cotton usually called sasnapa·pa.

b. *Gossypium hirsutum* L. Cultivated shrub, perennial, white fiber. Seed removed easily (BH), with difficulty (CPR).

c. Fiber for textiles; seed sometimes used in cooking.

d. Specimens collected at houses of Basilio Hernández, Carmen Pérez Reyes, Francisco Abundio Xochigua, Paulino Xochigua.

e. Same as Nos. 12, 36, 89.

9. *Algodón.*

a. pánʌmakʔ (generic term); brown lint cotton called esta·nalt, or štalʔnat.

b. *Gossypium hirsutum* L. var. *punctatum* (Schumacher) J. B. Hutchinson. Cultivated shrub, perennial; narrow leaf, brown fiber.

c. Same use as preceding.

d. Specimens collected at houses of Paulino Xochigua, Basilio Hernández, Lázaro Santes. One specimen brought from Papantla by Francisca Santes.

e. Same as Nos. 11, 111, 118.

10. *Chote.*

a. pušni?.

b. *Parmentiera edulis* DC. Wild tree, found in *monte alto* and in house clearings.

c. Riding and pack animals eat the fruit. Children may eat the ripe fruit, raw; not a standard dish. Tree, trimmed to shrublike proportions, used to dry laundry (MM). Wood used for baseball bats (AB).

d. Mercedes Morales, Antonio Bautista.

11. See No. 9.

12. See No. 8.

13. *Cordonzuelo; cuerno suelo* (*sic*).

a. ¢uʔpin.

b. *Acacia cornigera* (L.) Willd. Grows wild.

c. "Spines" inhabited by insects whose eggs are ground and applied to dental cavity. Treatment causes tooth to break and facilitates extraction (RG). Useful only as firewood (MG).

d. Rosalino González, MG.

14. *Ceiba.*

a. púčuti (*sic*) (pochote?).

b. *Ceiba pentandra* (L.) Gaertn. Large tree, of *monte alto.*

c. Fiber not used (MG); wood seldom utilized since it rots rapidly (DS).

d. MG, Donato Santes.

15. *Orozuz: tabardillo.*

a. išlakastapu maštansiks.

b. *Lantana camara* L. Volunteer, along trails and in abandoned maize fields.

c. Infants bathed in water in which a spray has been boiled, as protection against magical *malviento.* One of the seven plants boiled to prepare a bath which cures either children or adults from "fright" occasioned by the dead. Same bath also used to treat paleness and lack of appetite.

d. MG.

e. On two different occasions, same informant gave distinct Spanish names; on one, unable to remember Totonac term. Same as No. 50.

16. Unknown to informant.

a. lúkwati.

b. Araceae family, possibly *Philodendron,* sp. A vine; climbs *monte* trees.

c. Leaf used to wrap meat.

d. MG.

17. Unknown to informant.

a. mojawa.

b. *Abutilon notolophium* A. Gray. Grows wild in *monte.*

c. Used as firewood, and for roof withes; further utilized as altar ornament.

d. MG.

18. *Manzanilla.*

a. išlikatapačat.

b. *Malvaviscus arboreus* Cav. Wild, along trails and in abandoned maize fields.

c. Children may eat the fruit. May be used as a substitute for one of the plants ordinarily preferred for the bath of seven herbs, noted above (No. 15) (MG). Leaf ground and added to drinking water for ailing fowl (RG).

d. MG, Rosalino González.

19. Specimen missing.

20. *Mozote amarillo.*

a. Not recorded.

b. *Bidens pilosa* L. var. *radiata* Sch.-Bip.

c. Remedy for jaundice: leaves boiled with marigold (*flor de muerto*, No. 261) and liquid drunk.

d. MG.

e. Same determination as *mozote blanco* (No. 325), but different from *mozote amarillo* (No. 110). Presumably, therefore, this is *blanco*, not *amarillo*, as indicated above, and incorrectly is credited with attributes of latter.

21. *Capulín.*

a. mantákiwiˀ; manta·qkiwit; matánkiwiˀ.

b. *Ardisia escallonioides* Schlecht. & Cham. Wild; grows to ca. 3 m.

c. Edible; fruit eaten especially by birds (AM). Used as base of fermented beverage and black dye. Wood serves for roof withes (MG). Preferred support for vanilla vine "since its leaves are cool" (AM).

d. AM, MG.

e. See Nos. 41, 85, same Spanish name.

22. Canceled.

23. *Vainilla pompona.*

a. Not recorded.

b. *Vanilla pompona* Schiede. Determined by C. Schweinfurth. Wild vine.

c. Sometimes used to pollinate cultivated vanilla.

d. Lorenzo Xochigua.

24. *Tomate.*

a. pa·kłča.

b. *Lycopersicon esculentum* Mill. Volunteer in milpas.

c. Fruit important in diet; salable. Febrifuge: raw tomato placed on castor leaf, latter then applied to abdomen.

d. MG.

e. Fruit red; yellow variety unknown.

25. *Jonote blanco.*

a. lawakašúnuk.

b. *Heliocarpus americanus* L. Large shrub found wild along arroyo banks and in humid ground.

c. Bark soaked in water 8 days to loosen inner fiber; latter used as cordage (tumpline; filler for cradles, carrying frames; also to tie corn-husk wrapping on cakes of brown sugar).

d. MG.

e. Same as No. 107.

26. *Cojón de gato.*

a. wa·stakat.

b. *Tabernaemontana citrifolia* L. *Monte* shrub.

c. Used to support vanilla vine. Remedy for swellings and chilblains (*sabañón*): leaf smeared with lard, seared on hot coals, then applied to affected part. Remedy for pustules (MG).

d. Rosalino González, MG.

e. Not to be confused with other plants of same Spanish name (Nos. 138, 173).

27. *Santa Maria; flor de angel.*

a. išaškuȼikulan (*tabaco del santo*).

b. *Pluchea odorata* (L.) Cass. Volunteer in abandoned milpas.

c. Remedy for stomach ache; roasted leaves rubbed on abdomen.

d. MG.

28. *Palo de volador.*

a. sakátˀkiwi.

b. *Zuelania roussoviae* Pittier. Large *monte alto* tree.

c. Wood used for roof *cintas* (fig. 23, *d*, *i*); split poles for house walls; trunk as pole for Volador dance.

d. MG.

29. *Quelite; quitacalzón.*

a. jú·ks?ka; jukška?; jukška.

b. *Phytolacca icosandra* L. Volunteer in maize fields.

c. Edible (p. 161); as condiment (p. 157). Used as green dye; not fast color (AM).

d. Rosalino González, Otilia Villegas, MG, AM.

30. *Pimienta.*

a. ukún; uˀukún.

b. *Pimenta officinalis* Lindl. *Monte* tree.

c. Pole used as digging stick (MG). Tea made of dried leaves (EX); green leaves boiled to make "coffee." Seasoning for chicken or turkey (p. 158). Used as body whip in sweat bath. On Palm Sunday, men carry a spray (MG).

d. MG, Elena A. de Xochigua.

31. *Barbas de camarón.*

a. snukutˀ.

b. *Cuscuta corymbosa* R. & P. var. *stylosa* (Choisy) Engelm. Determined by T. G. Yuncker. Wild; parasite.

c. Remedy for jaundiced color; plant boiled; liquid drunk and used as bath.

d. Severa Xochigua, MG.

32. *Ajengibre.*

a. piníkučuˀ (pin, *chile;* kuču, *aguardiente*).

b. *Zingiber officinale* Roscoe. Cultivated in house clearings.

c. Tuberous rhizomes the base for an alcoholic "punch" (p. 164). Plant used as body whip in sweat bath. Leaves boiled, liquid used as bath. Tea made of boiled rhizome is remedy for *bombo* (unidentified complaint characterized by body swelling and yellowness of skin); for unspecified ailments; for parturient after sweat bath; and for giving strength to a woman who tires easily while walking.

d. Rosalino González, Otilia Villegas, MG.

33. *Semilla de culebra.*

a. líkučupalalua.

b. *Hibiscus abelmoschus* L. Cultivated in house clearings or maize fields.

c. Remedy for rabies and snake bite: victim drinks water in which seed has been boiled (MG). For snake bite: dried seed chewed and juiced swallowed (LX); chewed seed placed over bite (NM).

d. MG, Lorenzo Xochigua, Nemesio Martínez.

e. Said also to be called *la bella Elvira* (Juan Castro). Not to be confused with No. 216, same Spanish name.

34. *Campana; tulipán.*

a. Unknown to informant.

b. *Datura candida* (Pers.) Pasquale. Cultivated in house clearings.

c. Flowers for altar decoration. Remedy for swelling: leaves braised on coals and applied to affected part.

d. MG.

35. *Jazmín cimarrón.*

a. Unknown to MG.

b. *Clerodendron fragrans* Vent. var. *pleniflora* Schauer. Considered "wild"; evidently naturalized.

c. No utility.

d. Name given by unspecified informant; plant unknown to MG.

36. See No. 8.

37. *Puán.*

a. puyám (*sic*).

b. *Muntingia calabura* L. Wild tree; grows in cultivated and abandoned maize fields.

c. Raw fruit edible, salable in Papantla (MG). Remedy for "red" measles: fruit boiled in clean vessel free of chili and lard; liquid drunk (AM, MG). Remedy for measles: leaves boiled and liquid drunk (MG); leaves mashed and ground in water, liquid drunk. Same remedy for smallpox (AM).

d. MG, AM.

38. *Lelekes* (*sic*).

a. liliak; kiwilílak; lilʌk.

b. Five specimens: 4, *Leucaena pulverulenta* (Schlecht.) Benth; 1, *L. glauca* (L.) Benth. Wild near houses and in maize fields.

c. Tender leaves eaten raw (AM). Young pod eaten entire; once mature, only pith and seeds edible (p. 163) (MG).

d. AM, MG.

e. Same as 196; 196*a*, considered cultivated, identified as *L. glauca* (L.) Benth.

39. *Cola de alacrán.*

a. taskuyu túwan.

b. *Heliotropium angiospermum* Murr. Wild; yellow flower said to look like scorpion's tail.

c. Remedy for magical infirmity, *malviento*: children so afflicted bathed in water in which ground leaves have been boiled (AM). Plant of no utility (MG).

d. AM, MG.

40. *Ajillo.*

a. ašušmayak.

b. *Cydista aequinoctialis* (L.) Miers. *Monte alto* vine.

c. Of little use; serves as substitute ingredient in bath of seven herbs (see No. 15) (MG). Considered "hot," hence may be used to combat chills. Fruit eaten by wild pheasant (EX).

d. MG, Elena A. de Xochigua.

41. *Capulín.*

a. išlakastápu tamakní (*ojo de pescado*).

b. *Eugenia capuli* (Schlecht. & Cham.) Berg. Wild.

c. Fruit edible; used also as black dye (MG). Remedy for mild stomach ache: tea made from leaves of *capulín* and *guayabo* (No. 326); when taken, coffee should be omitted (AM).

d. MG, AM.

e. Totonac distinguish three kinds of *capulín* by name (Nos. 21, 41, 85); two (Nos. 41, 85) identified as same species. See No. 85, considered distinct by informants.

42. *Tortilla de los sapos.*

a. iščočíčak.

b. *Cissampelos pareira* L. Vine; volunteer in abandoned maize fields.

c. Remedy for magical *malojo* of infants: "sherry wine" added to leaves, and entire body anointed.

d. MG.

e. Same as No. 70.

43. *Algodón.*

a. pánamʌkˀ.

b. *Gossypium bardadense* L. Cultivated perennial; tall shrub; white fiber.

c. See No. 8.

d. Rosalino González.

44. Specimen missing; same as No. 78.

45. *Muitle.*

a. ¢í·ˀis, si·is.

b. *Jacobinia spicigera* (Schlecht.) L. H. Bailey. Known as *muitle morado* (EX), *colorado* (ML, SP), or *rojo* (MG), as distinguished from *negro* (MG), *verde* (SP), and *azul* (ML.).

c. Foliage used as red or pink dye (p. 243); effective only in dark of moonless night (PP). Leaves boiled with clothes of small children for protection against infirmity locally known as *alferecia* (EX). Flower boiled to dye *coyoles* (palm nuts sold as confection in Papantla) (MG).

d. ML, Silvestre Patiño, MG, Pedro Pérez, Elena A. de Xochigua.

46. *Chuchurutana.*

a. ¢u¢uyúkswan.

b. *Jacquinia aurantiaca* Ait.

c. Fresh blossoms boiled with cloth as yellow dye (MG). Dry flowers boiled to produce yellow dye; fast color (ML). As protection against rats, small bunch of sprays with leaves upward tied on cord supporting frame on which food is placed (PP).

d. MG, ML, Pedro Pérez.

e. Not used as fish poison (cf. Standley, p. 1106).

47. *Copalillo.*

a. pum.

b. *Protium copal* (Schlecht. & Cham.) Engl. Large *monte alto* tree.

c. Remedy for larvae (moyokuili) deposited in fly bite: leaf applied to bite with resin of *copalillo;* following day, leaf removed together with "worm" which adheres to resin (EX).

d. Elena A. de Xochigua.

e. Specimen said to be *copal,* not *copalillo* (MG). See also No. 205, same Spanish name. It may be noted that the Maya term for *copal* is pom (Ponce 2:414).

48. *Yerba negra.*

a. šunyialípasniʔ; šúnalipati; šanalipan; šu·nialípasniʔ (*escoba amarga*).

b. *Hyptis verticillata* Jacq.

c. Used as bath for persons ill of undiagnosed ailments; boiled leaves rubbed on entire body, then thrown on trail to transfer illness to first passerby. Substitute plant in bath of seven herbs (No. 15), for magical infirmities, *malviento* and *malojo* (MG). Remedy for magical *malviento:* child's body whipped lightly with fresh spray (ML).

d. MG, ML.

49. *Bejuco de chile.*

a. pinimáiyak; pinʔnimáiyak (pin, *chile;* máiyak, *bejuco*). Spanish term may be translation of native name.

b. *Salmea scandens* (L.) DC. *Monte* vine.

c. Used as fish poison (p. 80).

d. MG.

50. See No. 15.

51. *Tomate de guajolote; tomatillo de guajolote.*

a. išipišpak; išpišpak' čaʔčawilá.

b. *Passiflora foetida* L. var. *hastata* (Bertol.) Mast. Volunteer in abandoned maize fields. Fruit said to resemble turkey's wattle, hence name.

c. Raw fruit eaten "like a pomegranate."

d. MG.

e. Same as No. 116.

52. *Nigua del puerco.*

a. Not recorded.

b. *Paullinia tomentosa* Jacq. Volunteer in abandoned milpas and along trails; not a *monte* plant.

c. No utility (MG); fruit eaten (EX).

d. MG, Elena A. de Xochigua.

e. Same Spanish name applied to No. 52*a*.

52*a*. *Nigua del puerco.*

a. šaksispášni.

b. *Vernonia tortuosa* (L.) Blake. Volunteer in abandoned maize fields and along trails; not a *monte alto* plant.

c. No utility.

d. MG.

e. Same Spanish name applied to No. 52.

53. Unknown to informants.

a. púštuku; pu·štaku.

b. *Verbesina lindenii* (Sch.-Bip.) Blake. Determined by S. F. Blake. Grows by roadsides and in maize fields.

c. Boiled leaves serve as soap; used in bath of seven herbs (No. 15). Women who turn yellow after childbirth, given a tea prepared by boiling entire plant, and are bathed in liquid (MG). Stem used for toy known as *tronador* (similar to popgun) (MM).

d. MG, Mercedes Morales.

54. *Bajatripa.*

a. pinks · uat; pínksswat.

b. *Rivina humilis* L. Small shrub wild along trails.

c. Used in bath of seven herbs (No. 15) in place of *cedro* (No. 219); also used as bath to treat magical *malviento,* and to cure night sweats following magical contact with dead.

d. MG.

55. *Flor de mechuda.*

a. tuʔ¢on, ¢uʔ¢on.

b. *Caesalpinia* sp. Large shrub cultivated in garden; not a *monte* plant. Two kinds, one with red and one with yellow flowers.

c. Cough remedy: leaves boiled and liquid drunk. Flowers used to adorn altar.

d. MG.

e. See also No. 115, identified as to species.

56. *Ortiga.*

a. kájniʔ.

b. *Cnidoscolus multilobus* (Pax) I. M. Johnston. Wild.

c. Cotton soaked in milky sap and placed on tooth to cure toothache (MG). As cure for witchcraft, pieces of obsidian (*espada del trueno*) are ground to powder and mixed with well-chopped *ortiga;* mixture placed on affected part and renewed from time to time. Removed paste thrown away, since it carries with it part of spell (NM).

d. MG, Nemesio Martínez.

57. *Anona de mono; anona del monte.*

a. išákšikiwimušniʔ; išakčitkiwimušni.

b. *Annona globifera* Schlecht. Wild in *monte alto;* and volunteer in abandoned milpas.

c. Fruit sometimes eaten, "but it is small."

d. MG.

e. This the only annona we collected, except for an unidentified species of *Guatteria* (No. 321). In addition, Pedro Pérez distinguishes two others: *anona blanca* and *anona colorada;* fruit of the latter said to be "red, inside and out." Both, he says, do not occur in the *monte,* but "where people have lived." He also knows the *guanábana,* but considers it quite distinct from the annonas; it, also, is not found in the *monte.*

58. *Malva; malva de cubierta.*

a. malva (*sic*) (MG); no Totonac name (BX).

b. *Corchorus siliquosus* L. Weed along trails and in maize fields (NM, BX).

c. Febrifuge: leaves or entire plant well boiled; liquid strained and used as enema particularly for infants. Febrifuge: boiled leaves ground and prepared as poultice; mixed with salt and alcohol and applied to abdomen (MG).

d. MG, Bernabé Xochigua, Nemesio Martínez.

e. Same as Nos. 77, 354.

59. *Barba de guajolote.*

a. iškalčíšit čawilá; iskalčíšit‘ tawiláʔ; iškatišitčawilaʔ.

b. Three specimens; 2, *Lobelia berlandieri* A. DC.; 1, *Lobelia cliffortiana* L. Wild along arroyo and in humid ground.

c. No utility.

d. MG.

e. Same as No. 170.

60. *Berenjena.*

a. listokošat (*bastón de vieja*); išlištɔ·kwɔčate.

b. *Solanum laurifolium* Mill. Wild. Troublesome weed in maize field.

c. Tender leaves boiled, drained, and rubbed with salt over shoulders and legs of day-old infants to prevent *alforra* (ailment diagnosed by constant crying; thought to result from parents' having eaten chili) (EX, MG). Dubiously, as bath for newborn infants to ward off lunacy (LP). Leaves well-washed with soap and rubbed on body of newborn infant to clean him. Shoots of plant boiled in clean pot and given orally to infant as internal cleansing (ML).

d. Elena A. de Xochigua, MG, Luis Patiño, ML.

61. *Estribillo.*

a. išlišsputništilán.

b. *Trichilia havanensis* Jacq. Wild tree.

c. As bath to cure magical *malviento;* as body whip in sweat bath (AM). Bath in water in which leaves have been boiled is remedy for chills and fever, such as malaria, not for *malviento* (MG). Grated bark mixed with water and swallowed as cure for drunkenness (mm.).

d. AM, MG, Mercedes Morales.

62. *Espino blanco.*

a. akalɔqɔčɔkʔ.

b. *Adelia barbinervis* Schlecht. & Cham. *Monte* tree.

c. Useful as firewood (MG). Poultry eats seeds (AM).

d. AM, MG.

63. *Bejuco.*

a. Not recorded.

b. *Ipomaea* sp. Wild vine, yellow flower.

c. Sometimes eaten by swine.

d. AM.

64. Name unknown.

a. snatpu.

b. Not determinable. Wild *monte* tree (MG); wet seed covering exudes "soap" (AM).

c. No utility.

d. MG, AM.

65. *Ubero.*

a. napá·jkiwiʔ.

b. *Coccoloba schiedeana* Lindau. *Monte alto* tree.

c. Bark used as mouthwash to cure oral irritation (AM).

d. MG, AM.

66. *Piojo de caballo.*

a. Not recorded.

b. *Triumfetta semitriloba* Jacq. Volunteer in abandoned maize fields and along trails.

c. No utility.

d. AM, MG.

67. *Laurel.*

a. keska.

b. Not determinable. Wild tree; "grows anywhere." Two kinds recognized by informants: *blanco* and *amarillo* (AM).

c. Leaves used in bath to treat fever (AM). Not medicinal (MG). Flower utilized as altar decoration (MG).

d. AM, MG.

e. Although MG believes this to be *laurel blanco,* it may be *amarillo;* see No. 130.

68. Unknown to informants.

a. šipalínak.

b. Not determinable. Wild shrub.

c. Birds eat ripe fruit (AM); not medicinal but used as body whip in sweat bath (MG).

d. AM, MG.

69. *Pata de vaca; patevaca (sic); pata de toro (blanca).*

a. špipilá kiwi šasáqaqa (*mariposa palo blanco*).

b. *Bauhinia divaricata* L. *Monte* shrub. Informants distinguish two kinds: *blanca* (white) and *negra* (dark, black).

c. *Blanca* used for roof poles and withes; *negra* (no specimen) considered remedy for diarrhea.

d. MG.

70. See No. 42.

71. *Frijol ancho.*

a. šiuyúmin; šiúʔmin; šuyumín; šuyúmin *arribeño.*

b. Six specimens: 5, *Phaseolus lunatus* L.; 1, *Phaseolus* sp. Seed identified by Hugh Cutler as *P. lunatus* L. Cultivated.

c. Edible.

d. MG, Lorenzo Xochigua.

e. Same as Nos. 279 and 304.

72. *Acoyo blanco, oloroso.*

a. jinánsnapapa; ji·nani; jínan.

b. *Piper* sp. Wild along arroyo banks; grows to 2 m.

c. Condiment (pp. 154, 157, 160). Medicinal: after childbirth, women bathe with water in which leaves have been boiled; men never use *acoyo* in bath. Four times during first month of life, beginning fourth or eighth day, infants likewise bathed. *Acoyo colorado* (No. 184) said to be preferable for baths, but scarce; accordingly the *blanco,* always abundant, is substituted.

d. MG.

e. Of four specimens collected, one said to be cultivated (Rutilio Olmos). Remedy for pustules and hives: four lukewarm baths with water in which the following have been boiled: leaves of *ciruelo* (presumably, No. 292).

pusulucuate (No. 106), and *acoyo* (kind unspecified); preferably, a handful of mud added (ML).

73. *Bejuco blanco.*

a. sakáka máiyak (sakáka, *blanco;* máiyak, *bejuco*).

b. *Ipomaea mutabilis* Lindl. *Monte alto* vine; volunteer in abandoned maize fields and along trails.

c. Purge: individual to be treated extends arms, and vine cut to corresponding length. Stem chopped, pounded with wooden mallet, mixed with water; liquid strained and drunk (MG). Stem boiled and liquid taken as purge (NM).

d. MG, Nemesio Martínez.

e. Formerly more popular than at present.

74. *Epazote de la mula.*

a. ikstaqni *mula* (*sic*).

b. *Amaranthus spinosus* L.

c. Fodder (MG). Remedy for horses, donkeys, mules with bowel and kidney stoppage: plant boiled and liquid given beast (CR).

d. MG, Cecilio Ramírez.

75. *Epazote criollo.*

a. stániʔ.

b. *Chenopodium ambrosioides* L. Cultivated in house clearing, or maize field.

c. Popular condiment (pp. 152, 155–160, 162). Remedy for stomach ache: tea made of boiled leaf (MG, AM). Remedy for intestinal parasites: strong tea of *epazote,* mint (*hierbabuena*), or *capulin* (presumably No. 41) (AM). To hasten birth, *epazote* tea drunk during labor (ML).

76. *Tacote.*

a Not recorded.

b. Not determinable; Compositae family. Cultivated.

c. Used only as altar decoration.

d. MG.

77. See No. 58.

78. Unknown to informants.

a. aquaʔu; aquau; awaʔu.

b. *Bixa orellana* L. Cultivated in house clearings.

c. Remedy for smallpox and measles: seed rubbed in water and liquid drunk (LX, MG). Remedy for whooping cough: spinelike bristles removed from seeds; latter stirred in water to release color; liquid drunk. Infant sucks rag moistened with remedy (MM).

d. Lorenzo Xochigua, MG, Mercedes Morales.

e. Not used locally as dye.

79. *Ramón.*

a. Not recorded.

b. *Trophis racemosa* (L.) Urb. Volunteer in maize fields.

c. Preserves made from fruit (MG). Sprays cut for fodder (MG, EX, FAX).

d. MG, Erasmo Xochigua, Francisco Abundio Xochigua.

e. Same as No. 149.

80. *Huele de noche, blanco.*

a. skawilɔjɔ́ʔ; iškawiʌocʾkoʔ (*nixtamal de garza*).

b. *Cestrum nocturnum* L. Wild shrub. Informants distinguish two types: *blanco* and *prieto.*

c. Bath made from boiled leaves (MG, EX). Also used in bath of seven herbs (No. 15). Ambiguous reference implies use as abortifacient: tea (called *agua de tiempo*) made of flowers or leaves of white-fruited *huele de noche;* mixed with honey of native bee; drunk by pregnant woman (ML). Also used against night sweats occasioned by fright from dead (*asombro de muerte*) (MG).

d. MG, Elena A. de Xochigua, ML.

e. Same as No. 341.

81. *Mirto.*

a. makánkačawatʔ; makánkačawate.

b. *Salvia coccinea* Juss. ex Murr.

c. Used as substitute in bath of seven herbs (No. 15).

d. MG.

82. Unknown to informant.

a. zacatečiči (*sic*).

b. *Calea zacatechichi* Schlecht.

c. Remedy for bilious disorders.

d. Elena A. de Xochigua.

83. *Espuma de mar.*

a. Not recorded.

b. *Ammi majus* L. Cultivated in gardens; brought from Papantla.

c. Ornamental only.

d. Cecilia García.

84. *Palo de agua.*

a. ka·paʔ; kʌ́pʔa; kʌ́paʔa; kʌ́paʔ (Mexicano: tamalcahuite, atamalcahuite).

b. Three specimens: 1, *Dendropanax arboreus* (L.) Dec. & Planch.; 2, not determinable. Latter definitely not *Dendropanax;* Dr. Moore suspects both may be Euphorbiaceae. *Monte alto* tree.

c. Remedy for swelling: leaf laid on coals, then placed hot over affected part.

d. MG, Elena A. de Xochigua.

e. Same as Nos. 135, 223.

85. *Capulín.*

a. aka·lasniʔ; ka·lasni.

b. *Eugenia capuli* (Schlect. & Cham.) Berg. Wild.

c. Fruit edible; sometimes sold. Used also as black dye. Wood serves for roof poles and withes (MG). Not a favored support for vanilla vine, since the shrub is "hot." Flowers popular with bees (AM).

d. MG, AM.

e. See also No. 41; same species, but considered distinct by Totonac.

86. *Estafiate.*

a. sta·weyaʔ.

b. Not determinable.

c. Remedy for cough, common cold, earache, and magical *malviento* (EX). Remedy for aching ribs (MG).

d. Elena A. de Xochigua, MG.

e. No details concerning preparation.

87. *Cacahuapaxtle; maravilla.*

a. ma·stančulukʔ.

b. *Hamelia erecta* Jacq. Wild shrub.

c. Wounds washed with water in which leaf has been well boiled (MG). Remedy for pustules: bathed in hot liquid in which *capulin* (presumably No. 41) and *cacahuapaxtle* have been boiled; then rubbed with a mixture of sulfur and lime juice (ML). Plant serves as support for vanilla vine (MG).

d. MG, ML.

88. *Anis; hinojo.*

a. anis (*sic*).

b. *Foeniculum vulgare* Mill. Cultivated in maize fields.

c. *Seasoning* (pp. 153–155, 160).

d. MG.

e. Same as No. 296.

89. See No. 8.

90. *Zapote cabello.*

a. akčišit jaka; aktišit jaka.

b. *Licania platypus* (Hemsl.) Fritsch. Tall slender tree; *monte alto;* sometimes planted.

c. Fruit eaten; occasionally sold at time of All Souls' Day (LX). Seeds formerly eaten: split, boiled, dried in sun, and ground. Wood rots rapidly; sometimes used for fences (AM).

d. Lorenzo Xochigua, AM.

e. Same as No. 137.

91. *Chipila.*

a. čipilan (*sic*).

b. *Crotalaria longirostrata* Hook. & Arn. Cultivated from seed.

c. Edible (pp. 162, 169).

d. AM.

e. See No. 359, same Spanish name.

92. Not known to informant.

a. λpopoko.

b. Specimen missing. *Monte* plant, found also in maize fields; grows to ca. 2 m.

c. Remedy for pustules: leaves foam "like soap" when rubbed on eruption.

d. AM.

93. *Lechuguilla* (BX); not known to informant AM.

a. lišončaˀan.

b. *Sonchus oleraceus* L. (AM). Troublesome weed in maize fields (BX).

c. Edible (p. 161) (AM). No utility (BX).

d. Bernabé Xochigua, AM.

e. Same as No. 356.

94. *Cuchara.*

a. No Totonac name.

b. Specimen missing. Cultivated gourd.

c. Dried fruits used as receptacles (pp. 137, 212).

d. AM.

95. Unknown to informant.

a. kiwištapu (kiwi, *palo;* štapu, *frijol; frijol de árbol*).

b. *Cajanus cajan* (L.) Millsp. Cultivated in gardens.

c. Edible (pp. 157, 168).

d. AM.

e. Apparently not of recent introduction.

96. See No. 1.

97. *Tepejilote.*

a. litánpaˀ.

b. *Chamaedorea oblongata* Mart. Determined by L. H. Bailey. *Monte* plant.

c. Foliage used to decorate altar; roots made into chocolate beater (fig. 29, *b*); sprays as body whip in sweat bath.

d. MG.

98. *Ojite.*

a. ju·šapuˀ; ju·ksapu.

b. *Brosimum alicastrum* Sw. Large tree found only in *monte alto.*

c. Edible fruit (p. 163); leaves as fodder.

d. MG, Elena A. de Xochigua.

e. It is said that in time of famine, the Totonac once subsisted on *ojite* (MG).

99. *Palo de leche.*

a. tasámanit kiwi.

b. *Sebastiana* sp. (?). *Monte alto* tree; grows 6 to 8 m. tall.

c. Fish poison (p. 80).

d. MG.

100. *Jonote colorado.*

a. ¢u¢ókɔšunuk? (¢u¢ɔ́q, *colorado*).

b. *Hampea integerrima* Schlecht.

c. Inner bark used green as cordage, to tie bundles of brown sugar and to tie palm altar ornaments; used also in making cradles, tumplines.

d. MG.

101. *Frijol largo.*

a. See p. 135 for discussion of names.

b. Specimen missing. Cultivated.

c. Edible.

d. MG, Lorenzo Xochigua.

102. *Mostaza.*

a. mostasa (*sic*).

b. *Brassica nigra* (L.) Koch. Cultivated in house clearing and maize field; considered native.

c. Seeds a remedy for unspecified illness (MG). Seeds burned and smoke blown on victims of magical *malviento* (NM). For same ailment, one bathes in water in which plant has been rubbed (LX). Cough remedy for children: oil of *mostaza* seed heated and rubbed on chest, which then is covered with flannel cloth (LX).

d. MG, Nemesio Martínez, Lorenzo Xochigua.

103. *Maíz; maizena; escoba.*

a. No Totonac name.

b. Two specimens: one, *Sorghum vulgare* Pers.; another, *Sorghum vulgare* Pers. var. *technicum* (Koern.) Fiori & Paoletti. Cultivated; seeds tossed into maize fields (MG). Wild (SP).

c. Seeds removed and remaining plant serves as broom (MG).

d. MG, Silvestre Patiño.

e. Same as No. 226.

104. *Quelite colorado.*

a. sáwa šaλsɔ́qo; sawaˀ; ¢aˀwa.

b. Four specimens; 2, *Amaranthus hybridus* L.; 2, *A. dubius* Mart. Volunteer in maize fields; occasionally cultivated. Red flower and stem said to distinguish this from *quelite blanco* (No. 105) which has green blossom and stalk.

c. Edible (p. 161).

d. MG.

e. See also No. 105.

105. *Quelite blanco.*

a. sáwa saqáqa (sáwa, *quelite;* saqáqa, *blanco*).

b. *Amaranthus hybridus* L. Green stem.

c. Same use as No. 104.

d. MG.

106. *Pusulucuate; pushulucuate cimarrón.*

a. aqˀpásas; išaqˀpasás číči (aqˀpásas, *de perro*).

b. Cucurbitaceae family; possibly *Apodanthera* sp. Determined by L. H. Bailey. *Monte alto* (?) vine; weed in maize fields.

c. Seeds eaten "like pomegranate" (MG); fruit not eaten (LX). Remedy for pustules and hives (ML) (see No. 72).

d. MG, Lorenzo Xochigua, ML.

107. See No. 25.

108. *Matanza.*

a. Not recorded.

b. *Stellaria ovata* Willd. Grows wild, along trails and in maize fields.

c. Remedy for "fright" (*espanto*): entire body rubbed [with leaves?] and "sherry wine."

d. MG.

109. *Camote amarillo.*

a. išlilakamanikentamakní (said to mean *veneno de pescado* (?); tamakníˀ, *pescado*).

b. Two specimens: one, *Dioscorea macrostachya* Benth.; the other, *Dioscorea* sp. *Monte* vine.

c. Tuber used as fish poison (p. 80).

d. MG.

e. Same as No. 144.

110. *Mozote amarillo.*

a. Not recorded.

b. Two specimens: one, *Sclerocarpus uniserialis* B. & H.; the other, *S. schiedeanus* B. & H. Wild. Cf. No. 20.

c. Remedy for jaundice: one bathes with water in which plant has been boiled.

d. MG.

111. See No. 9.

112. *Chililllo.*

a. čilío (*sic*).

b. *Rourea glabra* H. B. K. *Monte alto* vine.

c. Used as foundation hoop for cradle, carrying frame, and hanging frame on which food stored. Also as quirt, roof withes.

d. MG.

e. Same as No. 154.

113. *Moradilla; siempreviva.*

a. ta·npíšwakakat‘.

b. *Zebrina pendula* Schnizl. *Monte* plant.

c. Remedy for diarrhea: leaves rubbed; dropped in boiling water; sugar added; liquid drunk (MM).

d. MG, Mercedes Morales.

114. *Culo de puerco.*

a. tapasíkiwi.

b. *Croton reflexifolius* H. B. K. Shrub; volunteer in abandoned maize fields and along trails.

c. Remedy for pimples around mouth: tender leaves cut and bitter sap from leaf-stem junction applied (AM, MG). Treatment for wounds: washed with hot water in which leaves have been boiled (MG).

d. AM, MG.

115. *Mechuda.*

a. Not recorded (see No. 55).

b. *Caesalpinia pulcherrima* (L.) Sw. Cultivated in gardens.

c. Decorative flower. Remedy for common cold and whooping cough: flowers boiled and hot liquid drunk.

d. Elena A. de Xochigua, MG.

e. See also No. 55.

116. See No. 51.

117. *Jazmin.*

a. Not recorded.

b. *Bourreria huanita* (La Llav. & Lex.) Hemsl. Cultivated in gardens; grown from root.

c. Decorative flower.

d. Pedro Pérez.

118. See No. 9.

119. *Culantro de zopilote.*

a. Not recorded.

b. *Apium leptophyllum* (Pers.) F. Muell. Wild.

c. No utility.

d. MG.

120. *Mirasol.*

a. pučičinišánat (čičini, *sol;* šánat, *flor*). Cf. No. 344.

b. *Cochlospermum vitifolium* (Willd.) Spreng. Cultivated in gardens, from cuttings.

c. Decorative flower.

d. Donato Santes.

121. *Pichoco cimarrón.*

a. pomačita (*cubierta de machete*).

b. *Erythrina herbacea* L. Wild tree. Very like edible *pichoco* (No. 284) but with flower lighter-colored.

c. No utility.

d. MG.

122. Unknown to informant.

a. akašman.

b. *Manfreda* sp. Volunteer along trails; not a *monte* plant; grows to ca. 1.5 m.

c. No utility.

d. MG.

123. *Muite; cocomuite; cocuitle; muiti; muites.*

a. No Totonac name.

b. *Gliricidia sepium* (Jacq.) Walp. Cultivated shrub or small tree; introduced about 15 years ago.

c. Cuttings planted as living fence (MG). Flower reputedly edible but not eaten locally (EX). Leaves used as febrifuge (LP).

d. MG, Elena A. de Xochigua, Luis Patiño.

e. Each informant gives different Spanish names.

124. *Cahuayote.*

a. popúyo.

b. *Gonolobus niger* (Cav.) R. Br. Determined by R. E. Woodson, Jr. *Monte* vine; sometimes cultivated in maize field or garden.

c. Fruit edible (p. 163).

d. AM.

125. *Zapote prieto.*

a. sáwal.

b. *Diospyros ebenaster* Retz. Tree grown from seed in maize field or garden.

c. Edible fruit.

d. MG.

126. Unknown to informant.

a. tan·taj.

b. *Philodendron radiatum* Schott. *Monte* plant.

c. Root formerly used as coiled filler of carrying frame.

d. MG.

127. *Zapote domingo.*

a. No Totonac name.

b. *Mammea americana* L. Grown from seed in maize field or garden; introduced ca. 1900.

c. Fruit edible.

d. MG.

128. *Papatla.*

a. łtakasakna; staqátsekna; łtakátseakna (seakna, *plátano*).

b. *Heliconia schiedeana* Kl. Wild along arroyo banks; sometimes grown from root stock.

c. Leaves used to wrap *púlacles* (p. 154). Also used to line and cover box in which maize seed is germinated.

d. MG.

129. *Galán.*

a. Not recorded.

b. *Brunfelsia americana* L. Cultivated in garden from seed.

c. Ornamental.

d. Elena A. de Xochigua.

130. *Laurel blanco.*

a. keska.

b. *Nectandra salicifolia* (H. B. K.) Nees. Wild tree, 15 to 20 m. tall.

c. Poles used for house walls. Favored support for vanilla (MG), although *capulín* (No. 21) considered better (PP). Used as altar decoration to assuage Virgin's grief on Good Friday (FG). Of no medicinal use (MG); tea of *laurel blanco* taken to relieve labor pains (EX) (see *e*, below).

d. MG, Pedro Pérez, Filiberta González, Elena A. de Xochigua.

e. Confusion concerning medicinal properties; according to MG, it is *laurel amarillo* (possibly No. 67) which is used by parturient.

131. *Bejuco colorado.*

a. slúlu·mayak; slulumáiyak.

b. Two specimens: one, *Melloa populifolia* (DC.) Bur.; the other, *Melloa* sp. *Monte alto* vine; runs along ground, producing neither leaves nor flowers; or climbs, bearing leaves and yellow blossoms. Former more useful: stem longer and more pliable.

c. This liana an acceptable substitute for *bejuco real* (No. 133) to lash roof frame, thatch, and wall poles. Also used for woven filler of hanging frame, on which provisions stored.

d. MG.

e. Same as No. 335.

132. *Zacual cimarrón.*

a. kiwípokaˀ; kiwípokeˀ.

b. *Enallagma* sp. Small *monte* tree; found chiefly along arroyos.

c. Fruit hollowed, dried, corked; used as container for gunpowder.

d. MG.

133. *Bejuco real.*

a. lišwilákat‘; lišwilakat, lišwil tat.

b. *Cydista potosina* (K. Schum. & Loes.) Loes. *Monte alto* vine.

c. The preferred lashing for house frame, thatch.

d. MG.

134. *Acoyo blanco.*

a. kónsapu.

b. *Pothomorphe umbellata* (L.) Miq. Volunteer along trails, arroyo banks, and in maize field. Distinguished from *acoyo colorado* (No. 184) as being odorless and inedible.

c. Remedy for swelling: leaf placed on baking plate or directly on coals, made into ball, rubbed between hands, then opened and spread on swelling.

d. MG.

e. See No. 72, same Spanish name, but pungent odor.

135. See No. 84.

136. *Cordón de Jesús.*

a. Unknown to informant.

b. Specimen missing.

c. Used to decorate altar.

d. MG.

137. See No. 90.

138. *Cojón de gato.*

a. kalušnánkiwi.

b. *Thevetia peruviana* (Pers.) Schum. Wild; found in *monte* or abandoned maize fields.

c. Used as roof poles for thatched house; as support for vanilla vine.

d. MG.

e. Not to be confused with other plants of same Spanish name (Nos. 26, 173).

139. Unknown to informant.

a. kalšɔ́kes; kaλˀšokes.

b. *Eryngium deppeanum* Schlecht. & Cham. Found near patches of grass; not a *monte* plant.

c. Whooping cough remedy: root well boiled; liquid cooled and drunk.

d. MG.

140. Unknown to informant.

a. Unknown to informant.

b. *Epidendrum condylochilum* Lehm. & Kränz. Determined by C. Schweinfurth.

c. No utility.

d. MG.

141. *Bazo de caballo.*

a. išmakpasakawaiu (*tochón* [old, cold tortilla] *de caballo*); makpása-kawayo.

b. *Capparis baducca* L. *Monte* shrub.

c. No utility (MG). Remedy: root grated, mixed with alcohol, and paste applied to body over spleen; burns and cannot be endured long (BX).

d. MG, Bernabé Xochigua.

e. Same as No. 343.

142. Unknown to informant.

a. Unknown to informant.

b. *Bletia purpurea* (Lam.) DC. Determined by C. Schweinfurth.

c. No utility.

d. MG.

143. Unknown to informant.

a. makšešetkiwi (*cascabel*, "because the seeds rattle").

b. Not determinable. Shrub found in *monte*, abandoned maize fields; "grows anywhere."

c. No utility.

d. MG.

144. See No. 109.

145. *Gordolobo.*

a. kɔn¢e¢élaks: kɔ·n¢i¢ila¢.

b. *Bocconia frutescens* L.

c. Remedy for ringworm of scalp (*tiña*): leaves soaked in alcohol and affected parts bathed. Remedy for tuberculosis: leaves boiled; liquid drunk and used as bath.

d. MG.

e. Same as No. 225.

146. *Cresta del gallo.*

a. išakčičilikit' púyuʔ (*cresta del gallo*).

b. *Dorstenia contrajerva* L.

c. Toothache remedy: root grated, and liquid placed with cotton on ailing tooth. Small girls make a "necklace" by splitting stem; tied at back of neck, with fleshy leaf hanging pendantlike in front.

d. MG.

147. *Camote blanco.*

a. ¢okósničat (*rodilla de la vieja*).

b. Four specimens: one, *Dioscorea floribunda* Mart. & Gal.; one, probably *D. convolvulacea* Cham. & Schlecht.: two, *Dioscorea*, sp. Determined by C. V. Morton.

c. Fish poison, presumably prepared as is No. 109.

d. MG.

148. *Calabaza.*

a. akpasas.

b. *Cucurbita* sp. Determined by L. H. Bailey. Wild.

c. No utility.

d. MG.

e. Same as No. 253.

149. See No. 79.

150. *Yerba dulce.*

a. saksitúan.

b. *Lippia dulcis* Trev.

c. Cough remedy: leaves boiled with leaf of avocado; half cup drunk. Same tea, without avocado and with addition of wild honey, remedy for stomach ache (MM), and for menstrual cramps (EX).

d. Mercedes Morales, Elena A. de Xochigua.

151. *Flor de mayo.*

a. No Totonac name.

b. *Plumeria rubra* L. Cultivated, from cuttings, in house clearing.

c. When in bloom, used in magical cures; at other times, marigold (*flor de muerto*, No. 261) substituted (ML). Body "cleansed" (ML) with necklace made by stringing blossoms so that stem engages with center of previous flower; sometimes different sections formed by blossoms of distinct color. Similar strands used as altar decoration (MG).

d. ML, MG.

152. *Ebano.*

a. akʔti.

b. Probably *Bumelia persimilis* Hemsl. *Monte alto* tree.

c. A source of chicle; latex collected in same way as from *zapote chico* (No. 191). Mixed with that from latter and sold in Papantla.

d. MG.

e. See also No. 349, which informants consider distinct.

153. *Chanacol.*

a. šiwiš·íʔ.

b. *Bombax ellipticum* H. B. K. Grown in garden, from cuttings; white or deep rose blossoms.

c. Flowers for altar ornament.

d. MG.

e. When planted in house clearing, (rose?) *chanacol* believed to have harmful effect on daughters of family, who "will not marry properly but will go off with some man" (Elena A. de Xochigua).

154. See No. 112.

155. *Lengua de gato.*

a. stimakat'místun (*lengua de gato*).

b. *Solanum lanceifolium* Jacq. Wild along trails.

c. No utility.

d. MG.

156. *Chápiso* (*sic*).

a. čápis.

b. Two specimens: one, *Syngonium podophyllum* Schott; the other, probably *Philodendron* sp. *Monte* vine; "grows anywhere."

c. Fruit edible but little used (RG). Aerial root used for baskets (p. 226), coiled filler of hanging frame (p. 226), and formerly to encase demijohns. Root scorched in corn-husk blaze to permit removal of skin; inner root "very white" and pliable.

d. Rosalino González, MG.

e. By informants, considered same as No. 269.

157. *Pito.*

a. makšpitʻkiwi; makšpitˀkiwi; makašpíkiwi (makšpitˀ: to whistle, by putting fingers to mouth).

b. *Psychotria trichotoma* Mart. & Gal.

c. Used for toy whistle. Short length of stem cut; inner portion pushed part way out of bark. Placed below lip and blown on.

d. MG.

e. Same as No. 183.

158. *Caña de puerco.*

a. iš·čankatpašni.

b. *Costus spicatus* (Jacq.) Sw. Wild along arroyo banks.

c. Stalks chewed as refreshment. Considered febrifuge.

d. MG.

159. Unknown to informant.

a. iškapat linakaʻ; iškapat linakeˀ.

b. *Acalypha schlechtendaliana* Muell. Arg. Wild in humid ground or along arroyo.

c. Used as body whip in sweat bath.

d. MG.

160. *Frijol.*

a. sikin¢u?.

b. *Phaseolus lunatus.* Determined by H. C. Cutler. Wild vine; volunteer in abandoned maize field.

c. Beans not edible. Wild pheasants eat flowers.

d. MG.

161. *Café.*

a. kapé (*sic*).

b. *Coffea arabica* L. Cultivated and volunteer.

c. Total output locally consumed as beverage.

d. MG.

162. *Granada del monte; amapola silvestre.*

a. pupílam; pupílan.

b. *Passiflora serratifolia* L. Wild vine; "grows anywhere."

c. Fruit edible; not sold, although said to be salable in Papantla.

d. MG.

e. Same as No. 217.

163. *Pitaya de ardilla.*

a. išluwášiétaya.

b. Specimen missing. Wild; "grows anywhere"; climbs trees.

c. Ripe fruit edible; resembles prickly pear.

d. MG.

164. Unknown to informants.

a. skúptama; eskúptamaˀ; skúptamaˀ.

b. *Portulaca pilosa* L. Volunteer in maize fields.

c. Remedy for swelling and erysipelas (inflammation, accompanied by fever): plant ground on metate; salt added; paste applied to affected part and covered with leaf of *acoyo blanco* (Nos. 72 or 134) or castor.

d. MG, ML.

e. Same as No. 232.

165. Unknown to informant.

a. kałwantelakajú.

b. *Polygala* sp. Wild vine.

c. Ornamental flowers.

d. AM.

e. Figures in folktale.

166. *Gallina ciega.*

a. Not recorded.

b. *Teucrium cubense* Jacq. subsp. *chamaedrifolium* (Mill.) Epl. Volunteer near houses or along trails.

c. Used to bathe pustules: entire plant, including root, boiled; hot liquid applied.

d. Mercedes Morales.

e. See No. 348, same species collected by another informant. Apparently through error, specimen of *Pisonia aculeata* L. likewise submitted under No. 166; see No. 204.

167. *Zapote reventador.*

a. lítsɔkniˀ; lí·sɔ·kniˀ (*cosa para pintar o para escribir*).

b. *Pachira aquatica* Aubl. Wild tree; grows along arroyos.

c. No utility.

d. MG, Pedro Pérez.

168. *Suelda consuelda.*

a. lukutˀtatastuk.

b. Specimen missing; collected in Papantla. *Monte* plant; grows along trails.

c. Used as purge to relieve aftereffects of heavy drinking. Poisonous if taken in excess.

d. MG.

169. *Misanteca.*

a. skoyutkiwiˀ.

b. *Licaria capitata* (Schlecht. & Cham.) Kosterm. *Monte alto* tree.

c. Leaf used as thatch.

d. MG.

170. See No. 59.

171. *Palo de rosa.*

a. ištúšti kačonˀ.

b. *Tabebuia pentaphylla* (L.) Hemsl. *Monte alto* tree.

c. Wood used for house beams and roof *cintas* (fig. 23, *d*, *i*).

d. MG.

172. *Papayito cimarrón.*

a. tutún čičiˀ (čičiˀ, *perro*).

b. *Carica papaya* L. Volunteer in abandoned maize fields. Some informants distinguish male (*macho*) (LX), and female (*hembra*) (MG).

c. Fruit stewed (LX); denied by some informants.

d. Lorenzo Xochigua, MG.

173. *Cojón de gato; manzanito cimarrón.*

a. šanatˀkiwi (šanatˀ, *flor;* kiwi, *palo*).

b. *Eugenia trunciflora* (Schlecht. & Cham.) Berg. Wild.

c. Favored support for vanilla.

d. MG.

e. Not to be confused with other plants of same Spanish name (Nos. 26, 138).

174. *Palo verde.*

a. Unknown to informant.

b. *Iresine interrupta* Benth.

c. No utility.

d. MG.

e. Not well known to informant.

175. *Cruceta.*

a. kulu·s túkun; kulu·sʔtúkun; kulu·sʔtúkutun šaláqlan·qa (kulu·sʔ, *cruz;* túkun, *espina;* šaláqlan·qa, *grande*).

b. *Randia watsoni* Robins. *Monte alto* shrub or small tree; also volunteer in abandoned maize fields. Scarce.

c. Remedy for hydrophobia and snake bite: (a) root boiled, liquid mixed with alcohol and drunk; (b) fruit [boiled?] strained and drunk with alcohol; (c) root well boiled and liquid taken with gunpowder (*sic*).

d. MG.

e. Not to be confused with No. 329, same Spanish name.

176. *Chijol.*

a. ska·k‘an kiwi; skakán kiwi.

b. *Piscidia communis* (Blake) Harms. Tall tree in *monte alto.*

c. Wood preferred for house posts.

d. MG.

e. An old reference (Gazeta de México, p. 283) remarks that a post of *chijol,* set in the ground, turns to flint (*pedernal*) in the course of several years.

177. Unknown.

a. Unknown.

b. *Pereskia grandifolia* Haw. Specimen gathered in Plan de Palmar.

c. Unknown.

d. Unknown to MG.

178. Unknown to informant.

a. Unknown to informant.

b. *Centrosema plumieri* Benth. Volunteer in abandoned maize fields and along trails.

c. No utility.

d. MG.

179. *Palo de lumbre.*

a. łkuiátkiwi; łkuyát kiwi.

b. *Malpighia glabra* L.

c. Febrifuge: raw leaf macerated in water and liquid drunk.

d. MG.

180. *Tarro.*

a. mʌ·tluˀuk.

b. *Guadua aculeata* Rupr. Determined by J. R. Swallen; verified by F. A. McClure; also called *Bambusa aculeata.* *Monte alto* plant, found especially along arroyos.

c. Stalk used for fences, house walls, and certain furnishings (frames, shelves, platforms, table, and bed frames).

d. MG.

181. *Chalahuite silvestre.*

a. ka·ʌm; kal·ʌmˀ.

b. *Inga leptoloba* Schlecht. Wild.

c. Edible fruit (p. 163).

d. MG.

e. See No. 195, regarded by informant as cultivated form.

182. *Verbena; alfombrilla cimarrona.*

a. Unknown to informants.

b. *Verbena ehrenbergiana* Schauer. Wild.

c. No utility (JC). Remedy for stomach ache: leaf boiled, salted, and liquid drunk (EX).

d. Juan Castro, Elena A. de Xochigua.

e. Plant unknown to MG. Same as No. 310.

183. See No. 157.

184. *Acoyo colorado.*

a. ȼuȼɔkɔk jínan (jínan, *rojo*).

b. *Piper* sp. Wild along arroyos or in humid ground.

c. Leaf as condiment (pp. 154, 157, 184). Used in bath; leaves boiled and rubbed on body. Four or eight days after childbirth, women bathe in sweat bath, using liquid in which entire plant has been boiled, and rubbing body with handful of leaves.

d. MG.

185. Specimen missing.

186. *Jobo.*

a. šipaˀ.

b. *Spondias mombin* L. Large *monte alto* tree; not cultivated.

c. Edible fruit.

d. MG.

187. *Bejuco de parra.*

a. s‘núkuti; snúnkut; s‘núnkutˀ.

b. *Vitis tiliaefolia* H. & B. *Monte alto* vine.

c. Fruit occasionally eaten. Thick stem contains fluid which, in emergency, may be drunk to quench thirst.

d. MG.

188. Unknown to informant.

a. akasúkut; akasúkuȼ.

b. *Podachaenium eminens* (Lag.) Sch.–Bip. Determined by S. F. Blake.

c. Poles serve as uprights of house wall; also as roof *cintas* (fig. 23, *d*, *i*). Leaf used to wrap chili or squash (*pipián*) seed during artificial germination.

d. MG.

189. *Pata de vaca, negra.*

a. špipilá kiwiʔ; spipilákiwi šaȼiȼéketʔ.

b. Two specimens: one, *Bauhinia dipetala* Hemsl.; the other, *Bauhinia* sp. Wild along arroyos.

c. Remedy for diarrhea, adults and children: raw leaf macerated in water and liquid drunk, sometimes strained previously.

d. MG.

e. Same as No. 293.

190. *Pipín.*

a. cilíksniˀ.

b. *Celtis monoica* Hemsl. *Monte alto* tree.

c. No utility.

d. MG.

191. *Zapote chico.*

a. liksujáqatˀ; skulújaq; ja·ka.

b. *Achras zapota* L. *Monte alto* tree (MG); also volunteer in second growth *monte* (LX, JB).

c. Wood used for house frame, digging stick (MG). Remedy, ambiguously phrased, for pustules on feet: skunk meat and broth of *zapote* (presumably, *zapote chico*) recommended. Bark boiled and liquid apparently applied, together with sap from *sangregado* (No. 239) (MG). Fruit edible; sometimes sold in Papantla (LX, JB). Chicle occasionally sold to Papantla merchants (MG).

d. MG, Lorenzo Xochigua, José Bautista (junior), ML.

e. See Nos. 221, 349. Mentioned as tasty wild fruit among one group of Totonac (Relación de Hueytlalpan).

192. *Piñón.*

a. sku·luˀu.

b. *Jatropha curcas* L. Shrub, cultivated in house clearings.

c. Edible: seed dried, shelled, toasted, and ground; added to various dishes.

d. MG, Rosalino González.

e. Laxative qualities not recognized by Totonac; milky sap said to stain clothing.

193. *Frijolillo.*

a. stapún kiwiˀ (stapú, *frijol:* kiwiˀ, *palo*).

b. *Pithecellobium arboreum* (L.) Urb. *Monte alto* tree; "grows anywhere."

c. Wood used for roof poles (*alfarda*, fig. 23, *d*, *i*), door frames and "sills." Also for wooden trays, but cedar (No. 219) preferred.

d. MG.

194. *Caoba.*

a. makšʌšuk kiwi.

b. *Swietenia macrophylla* King. *Monte alto* tree.

c. Wood used for beams, for roof poles (*alfarda*, fig. 23, *d*, *i*), and wooden trays; in all cases, *cedro* (No. 219) preferable.

d. MG.

195. *Chalahuite.*

a. taláška.

b. *Inga paterno* Harms. Tree grown from seed in house clearings and maize fields.

c. Edible fruit.

d. MG.

e. See No. 181, considered wild form.

196. See No. 38.

196a. *Lelekes* (*sic*).

a. li·lʌk.

b. *Leucaena glauca* (L.) Benth. Cultivated, from seed, in milpas and house clearings; sometimes a volunteer. Leaf said to be larger than that of wild form (No. 38).

c. Fruit eaten, especially by children.

d. MG.

e. This specimen labeled 196*a* to distinguish it from 196, wild form; latter treated under No. 38.

197. *Amor.*

a. No Totonac name.

b. *Momordica charantia* L. Determined by L. H. Bailey. Cultivated vine; not found in *monte.*

c. Seed sometimes eaten; plant "of little importance."

d. MG.

198. *Zapote de calentura.*

a. tu·paˀ; tuˀpaˀ.

b. Not determinable. *Monte alto* tree.

c. Fruit edible; wood of no utility; does not produce chicle.

d. MG.

199. Unknown to informant.

a. laqašmáiyak.

b. *Serjania* sp. Wild vine.

c. Fish poison (p. 80); not injurious to humans.

d. MG.

200. *Capitas.*

a. pustapu máyak (pustapu [pulákstapu], *capitas* (p. 154); máyak, *bejuco*).

b. *Drepanocarpus lunatus* (L. f.) Meyer. *Monte alto* vine.

c. "The strongest of all lianas"; used to haul pole for Volador dance; also laced about it so that dancers can ascend. No further utility; not employed as house lashing.

d. MG.

201. *Bejuco de San Diego.*

a. spisĺɔkət jukiˀ (*pescuezo de venado*); išpišlókot júke; šakalókot júki; išpišni júke.

b. *Petrea volubilis* L. *Monte alto* vine; sometimes transplanted to gardens (MG).

c. Decorative flower. Stem formerly used as mouthpiece for pipe; no further utility.

d. MG, Lorenzo Xochigua, Manuel de la Luz.

202. Unknown to informant.

a. ču·čəks.

b. Four specimens collected by same informant: two, *Gouania polygama* (Jacq.) Urb.; one, *Smilax aristolochiaefolia* Mill. (see No. 252); and one, *Tournefortia hirsutissima* L. *Monte alto* vine.

c. Stem cut and added to *pulque de caña* in course of fermentation (p. 165).

d. MG.

203. *Palo de humo; chamacuero.*

a. kašitúkun; kasiłstúkun.

b. Two specimens. one, probably *Pithecellobium insigne* M. Micheli; the other, probably *Pithecellobium* sp. Wild tree; "grows anwyhere."

c. Children sometimes eat flesh within pod; no further utility.

d. MG.

e. Same as No. 294.

204. *Uña de gavilán.*

a. i¢iján wayaˀ: istiján waiya (waiya, *gavilán*).

b. *Pisonia aculeata* L. Grows in *monte alto.*

c. No utility.

d. MG.

e. Fruit said to be viscid; if bird alights on fallen fruit, is unable to escape. See also No. 166.

205. *Copalillo.*

a. sipípum.

b. *Exothea copalillo* (Schlecht.) Radlk. *Monte alto* tree.

c. Wood used for house frame; sprays as body whip in sweat bath.

d. MG.

e. Not to be confused with No. 47, same Spanish name.

206. *Alzaprima.*

a. awawá kiwi.

b. *Carpodiptera ameliae* Lundell. *Monte alto* tree.

c. Wood used for house posts and beams.

d. MG, Rosalino González, Mercedes Morales.

207. Unknown to informant.

a. stapukónʌt (stapu, *frijol*); stapuqónʌt; li·nʌke (*para azotarse*).

b. Probably *Paullinia clavigera* Schlecht. *Monte alto* vine; also volunteer in abandoned maize fields.

c. Fruit sometimes eaten. Spray used as body whip in sweat bath.

d. MG.

e. Apparently supposed by informant to be same as No. 246; however he says "there is another of same name but it is no good."

208. *Guayabillo.*

a. misinín kiwiʔ; mi·¢inín kiwiʔ.

b. *Calyptranthes schiedeana Berg.* Grows in *monte alto.*

c. Fruit edible. Pole serves as digging stick; saplings as roof poles of thatched house.

d. MG.

209. *Ombligo de criatura.*

a. ištampúsniʔ skaʔta (ištanpúsniʔ, *ombligo;* skaʔta, *criatura*).

b. *Operculina ornithopoda* (Robins.) House. Vine; volunteer in abandoned maize fields.

c. No utility.

d. MG.

210. Unknown to informant.

a. Unknown to informant.

b. *Vernonia aschenborniana* Schauer.

c. Presumably of no utility.

d. MG not acquainted with plant.

211. *Hoja fresca.*

a. skawíwi tuwan; sqawitu·wan (*hoja fresca*).

b. *Kalanchoë pinnata* (Lam.) Pers. Wild plant [presumably naturalized].

c. Headache remedy: green leaf placed over each temple.

d. MG, Dolores Méndez.

e. Same as No. 235.

212. Unknown to informant.

a. Unknown to informant.

b. *Eupatorium albicaule* Sch.-Bip.

c. Presumably no utility.

d. MG not acquainted with plant.

e. See No. 314.

213. Unknown to informant.

a. Unknown to informant.

b. *Bunchosia biocellata* Schlecht.

c. Presumably no utility.

d. MG not acquainted with plant.

214. *Chile verde; chiltepín.*

a. stakáʔpin.

b. *Capsicum frutescens* L.; seed identified by Charles Heiser, Jr., as *C. annuum.* Volunteer in milpa; seed sometimes tossed in field to increase yield (AM, RG).

c. Standard seasoning; salable (MG) in Papantla (AM, RG). Remedy for magical *malviento* and *malojo* in children (ML).

d. AM, Rosalino González, MG, ML.

215. Unknown to informant.

a. Unknown to informant.

b. *Smilax mollis* H. B. K.

c. Presumably no utility.

d. MG not acquainted with plant.

216. *Semilla de culebra.*

a. Not recorded.

b. *Abrus precatorius* L.

c. Presumably no utility.

d. Catalina Calderón.

e. Plant unknown to MG. Not to be confused with No. 33, same Spanish name.

217. See No. 162.

218. Unknown to informants.

a. akásʔti; akášti ʔ.

b. *Guazuma ulmifolia* Lam. *Monte alto* tree.

c. Fruit sometimes eaten by humans (MG), also by animals. Wood serves as fuel (RG).

d. MG. Rosalino González.

219. *Cedro; cedro real.*

a. puksnún kiwiʔ.

b. *Cedrela mexicana* M. Roem. *Monte alto* tree.

c. Preferred wood for house construction (posts, beams) and for furniture (MG). Remedy for bilious disorders caused by anger: tea made of leaves combined with rosemary (*romero*). Abortifacient: tea made of boiled bark (ML). Sprays used in bath of seven herbs (No. 15).

d. MG, ML.

220. *Zapote mante.*

a. kukunúʔ.

b. *Pouteria campechiana* (H. B. K.) Baehni. *Monte alto* tree (MG); also cultivated (LX).

c. Fruit edible (MG); seldom sold (LX):

d. MG, Lorenzo Xochigua.

221. *Higo.*

a. suja; sujɔk?; sú?ja.

b. *Ficus tecolutlensis* (Liebm.) Miq. *Monte alto* tree.

c. No utility except for shade (MG). Fruit edible but seldom eaten (ML). Milky juice of *higuero* (*sic*) (sú?ja) combined with that of *zapote chico* (No. 191), and *ábalo* (No. 349); and sold as chicle (NM).

d. MG, ML, Nemesio Martínez.

222. *Higuera.*

a. čak'łti; čaksti.

b. *Ficus glaucescens* (Liebm.) Miq. *Monte alto* tree.

c. No utility (MG). Sap used as adhesive to stick paper (MM).

d. MG, Mercedes Morales.

e. Same as No. 280. Sap of similar tree, but with narrower leaf, used to kill fly larvae about wound after hog is castrated.

223. See No. 84.

224. *Pita.*

a. aksʔkaiʔ.

b. Probably *Aechmea magdalenae* (André) André ex Bak. Determined by Lyman B. Smith.

c. Fiber used for casting nets.

d. Pedro Pérez.

225. See No. 145.

226. See No. 103.

227. *Perritos.*

a. ma¢ók; mʌ¢ɔk.

b. Probably *Maranta arundinacea* L. Cultivated on fringes of maize field. Said not to flower.

c. Underground stem edible (p. 156).

d. AM, MG.

228. *Chaca.*

a. tasunʔ; ta·sunʔ

b. Two specimens collected; one not determined; the other, *Bursera simaruba* (L.) Sarg. *Monte alta* tree.

c. Cuttings planted as living fence. Wood inferior as fuel: "He who burns *chaca* becomes poorer than ever." Sap used as adhesive to stick paper (MM). Bark boiled with salt; liquid taken as purge and to reduce fever (FVM, LP). Headache remedy: leaf placed on each temple (MG); or any green leaf stuck to temples with sap freshly extracted from trunk of *chaca* (RG).

d. Mercedes Morales, Francisco Villanueva Mata, Luis Patiño, MG, Rosalino González.

229. *Ala de murciélago.*

a. Not recorded.

b. Genus and species not determined; family possibly Cucurbitaceae.

c. Remedies for gonorrhea: leaves cooled in night air and placed in water; liquid drunk. Entire fruit mashed in water and liquid drunk.

d. MG.

230. *Flor de pito; flor de izote.*

a. akalúkutʔ.

b. *Yucca aloifolia* L. Found in *monte alto* (*sic*) and house clearings; apparently not cultivated (?).

c. Flower edible (p. 162).

d. MG.

231. Unknown to informant.

a. išak'pásas·páka?.

b. Genus and species not determined; Curcurbitaceae family. *Monte* vine.

c. Used as bath and to wash pustules, foams like soap (MG). Formerly used to wash clothes (FG).

d. MG, Felipa García.

232. See No. 164.

233. *Frijol criollo; frijol de Castilla.*

a. ka·nástapu; kanástapu.

b. *Phaseolus* sp. Seed identified by Hugh Cutler as *P. vulgaris* L. Cultivated.

c. Edible; salable in Tajín and in Papantla; "more expensive than other beans."

d. Paulino Xochigua.

e. See p. 134 for details.

234. Unknown to informant.

a. taškat (*miel*).

b. *Perymenium gymnolomoides* (Less.) DC. Wild vine.

c. Flowers popular with native and introduced bees.

d. AM.

235. See No. 211.

236. *Bejuco del sol.*

a. jaka·šanat'.

b. *Senecio confusus* Britten. Vine.

c. No utility.

d. AM, MG.

237. Unknown to informant.

a. škałpuputla·pánit (*espuma de tigre*)

b. *Odontonema callistachyum* (Schlecht. & Cham.) Kuntze. Wild.

c. No utility.

d. MG.

238. *Frijol majayán.*

a. lukústapu.

b. *Phaseolus* sp. Seed identified by Hugh Cutler as *P. vulgaris* L. Cultivated; allegedly introduced from highlands; date unknown (TG); some Totonac regard it as native.

c. Edible.

d. Tirso González, AM, Natividad Méndez.

e. See p. 135 for details.

239. *Sangregado.*

a. pʼʌksnún kiwiʔ.

b. *Croton draco* Schlecht.

c. Wounds washed first with water in which leaf of guava or of *cacahuapaxtle* (No. 87) has been boiled, then milky sap of *sangregado* applied. Remedy for itch: sap applied to affected area. Remedy for pustules on feet (see No. 191) (MG). Sap serves as red stain for wood, not as textile dye (PP).

d. MG, Pedro Pérez.

240. *Yuca blanca.*

a. koškéwi.

b. *Manihot esculenta.* Determined by H. C. Cutler. Grown from cuttings in maize fields and patios. Informant distinguishes two types: one narrow-leafed with white root (*yuca blanca*); another wide-leafed with yellow root (*amarilla*); the former more tasty.

c. Year-old roots of both types eaten (p. 156).

d. MG.

241. *Tabaquillo.*

a. aškutkiwi.

b. *Lippia myriocephala* Schlecht. & Cham. Volunteer shrub in abandoned maize fields.

c. Wood used for beams and roof frame of native house.

d. MG.

242. Unknown to informant.

a. łtanke.

b. Possibly *Bomarea edulis* (Tuss.) Herb. Wild vine in maize fields.

c. Raw root eaten to stimulate lactation.

d. MG.

243. *Zacate paral* (*sic*).

a. No Totonac name.

b. *Panicum purpurascens* Raddi. "Grows anywhere." Runners transplanted; not propagated successfully from seed. Not considered native, but date of introduction unknown.

c. Fodder.

d. MG.

244. *Ala de murciélago.*

a. pača·watúwan (pača·w, *bazo*); pačawatúan.

b. *Passiflora coriacea* Juss. Vine; wild in milpa and abandoned maize fields.

c. Remedy for disorders of spleen (*bazo*): leaves seared on coals; smooth side rubbed with tallow and placed over spleen.

d. MG.

e. Same as No. 334. By another informant, same species given different Spanish name and distinct use; see No. 366.

245. *Zacate guinea.*

a. No Totonac name.

b. *Panicum maximum* Jacq. "Grows anywhere." Sometimes cultivated from seed; "it takes a long time to grow."

c. Fodder and thatch.

d. MG.

246. Unknown to informant.

a. stapukúnut.

b. Probably *Serjania* sp. Wild vine in milpas.

c. Edible fruit (?).

d. MG.

e. Informant gives virtually same native name for No. 207, and apparently has confused the two specimens. It seems more likely that the edible fruit is produced by No. 207.

247. *Tomatillo.*

a. ča·mpúlulu.

b. *Physalis* sp. Wild in maize fields; scarce.

c. No utility (MG). Imported, for sale in Papantla market, but unpopular there; not used in Tajín. Small wild tomato (No. 24) preferred (MM).

d. MG, Mercedes Morales.

e. In many parts of Mexico *Physalis* and true tomato of equal importance.

248. *Aguacate oloroso.*

a. kuka·ta.

b. *Persea americana* Mill. var. *drymifolia* (Schlecht. & Cham.) Blake. Cultivated from seed.

c. Fruit edible; leaf a condiment (pp. 157, 160). Remedy for magical *malviento* in children: leaves burned on sherd beneath child's cradle so that smoke may envelop him (MG). Remedy for fright caused by magical contact with dead: leaves burned to produce curative smoke (ML). Remedy for "fright": handful of earth is heated; to it are added water, alcohol, holy water, shredded tobacco, one or two cloves of garlic, and several leaves of *aguacate oloroso.* With this mixture, sign of the cross drawn on forehead, wrists, and inner elbow joints; applied in evening; patient bathes on following day (FVM). Sprays used in bath of seven herbs (No. 15). Remedy for cough and common cold: tea made by boiling leaves (MG).

d. MG, ML, Francisco Villanueva Mata.

249. *Higuerilla roja.*

a. kaštilenke.

b. *Ricinus communis* L. Not cultivated.

c. Seed a source of oil used in cooking (p. 161).

d. MG.

e. Same species as No. 250, but considered distinct by informants.

250. *Higuerilla blanca.*

a. kaštilenke šasakaqa (šasakaqa, *blanca*).

b. *Ricinus communis* L. Not cultivated.

c. Febrifuge: leaf seared on coals and placed, together with raw egg or wild tomato (No. 24), as compress on belly, soles of feet, sometimes also on lumbar area. Or fresh leaf dipped in raw egg and applied to belly and soles of feet. Remedy for swelling: leaves seared on coals and applied to affected part. Seed not utilized (cf. No. 249).

d. MG.

251. Unknown to informant.

a. mašus.

b. *Mucuna argyrophylla* Standl. Wild vine.

c. Remedy for eye irritation: liquid from stem applied to eyes.

d. MG.

252. *Zarza.*

a. sarsa (*sic*).

b. *Smilax aristolochiaefolia* Mill. Wild vine; "grows anywhere".

c. Stem used as coil filler for cradles. Roots used to make fermented beverage (p. 164). Latter left outdoors overnight and taken in quantity as remedy for gonorrhea (RO).

d. Lorenzo Xochigua. Rutilio Olmos, MG.

e. Same as one specimen of No. 202.

253. See No. 148.

254. *Chicharo.*

a. kalabanšas (*sic*).

b. *Pisum sativum* L. Cultivated in maize fields.

c. Not important in diet.

d. MG.

255. *Calaguala.*

a. li·kuču?.

b. *Phlebodium aureum* (L.) Smith. Epiphytic fern growing on *palma redonda* (No. 259).

c. Remedy for abcesses: lower stem boiled and liquid drunk.

d. MG.

256. *Cola de gallo; pluma de loro; cola de loro.*

a. i¢taján; i¢pakán.

b. *Codiaeum variegatum* Blume. Ornamental plant cultivated in gardens.

c. Altar decoration.

d. MG.

e. Same determination as Nos. 257 and 258, but informants recognize three kinds, distinguished by Spanish names (see above).

257. See No. 256.

258. See No. 256.

259. *Palma redonda.*

a. stilikiʔ ¢u·kswat.

b. *Sabal mexicana* Mart.; determined by L. H. Bailey. Wild palm (MG), spared when fields are cleared.

c. Leaf for cordage, thatch, chair seats, and ornamental palm figures used in altar decoration.

d. MG.

260. *Camote.*

a. manta [generic term for sweetpotato]; saqáka ma·nta (*camote blanco*), ¢u¢óqoʔ ma·nta (*camote morado*); smukúku ma·nta (*camote amarillo*).

b. *Ipomaea batatas* (L.) Lam. Cultivated.

c. Root relatively important in diet; leaf not eaten.

d. MG.

e. Informant distinguishes sweetpotatoes by color. Of four specimens collected, two have white skin and flesh; one has red or purple skin and one unidentified as to color.

261. *Flor de muerto.*

a. jaka¢anat.

b. *Tagetes patula* L. Cultivated (?) in house clearings and maize fields.

c. Altar decoration (MG). Substitute for *flor de mayo* in magical "cleansing" ceremony (No. 151) (ML).

d. MG, ML.

262. *Almendra.*

a. No Totonac name.

b. *Terminalia catappa* L. Found in one garden only; introduced from Jalapa some years ago.

c. "Almonds" declared edible, but not eaten locally.

d. MG.

263. *Tortilla de ratón; pegarropa; pegapega.*

a. iščau¢ia; čausiyá.

b. Two speciments: one, *Desmodium axillare* (Sw.) DC. var. *genuina;* the other, *Desmodium canum* (Gmel.) Schinz & Thell. Determination by Bernice G. Schubert. Weed in maize fields (BX).

c. No utility (MG). Remedy for diarrhea and nausea (LP).

d. MG, Bernabé Xochigua, Luis Patiño.

264. Unknown to informant.

a. páksʔtamak.

b. *Anoda cristata* (L.) Schlecht.

c. Remedy for magical *malviento* in small children: sprays boiled and liquid used in bath.

d. MG.

265. Unknown to informant.

a. ¢i¢aketkúčušu.

b. *Eupatorium odoratum* L. Wild vine in abandoned milpas.

c. Used [as substitute?] in bath of seven herbs (No. 15).

d. MG.

266. *Palo de voladillo.*

a. snʌtpuʔu.

b. *Sapindus saponaria* L. *Monte alto* tree.

c. Fruit of no utility. Wood used for ax handle.

d. MG.

267. *Paxtle; pañal de niño.*

a. Unknown to informant.

b. *Tillandsia usneoides* L.

c. Used on Christmas Eve to make bed for Christ Child; practice confined to one family.

d. MG.

268. Unknown to informant.

a. kukújalaʔ.

b. *Myriocarpa cordifolia* Liebm. Wild shrub found in humid ground and along arroyos.

c. Leaves used to wrap purchases of meat.

d. MG.

269. See No. 156.

270. *Vara de San José.*

a. išlištŏkɔ.

b. Probably *Jacobinia umbrosa* (Benth.) Blake. Cultivated in gardens.

c. Altar decoration.

d. MG.

271. *Carrizo del sol.*

a. iškatit čičiníʔ (čičiniʔ, *sol*).

b. *Russelia campechiana* Standl. *Monte* vine.

c. Altar decoration (AM). Formerly used as stem for pipe (MG).

d. MG, AM.

272. Canceled.

273. *Calabaza.*

a. nípšiʔ, nipišiʔ.

b. *Cucurbita moschata* Duch. Determined by L. H. Bailey. Hugh Cutler identifies seeds as *C. moschata* Poiret (p. 136). Cultivated.

c. Fruit eaten (p. 136).

d. MG.

e. See also No. 278.

274. *Pedo de culebra.*

a. Not recorded.

b. *Asclepias curassavica* L. Wild vine.

c. Remedy for hemorrhoids: young leaves seared on coals, smeared with castor oil, and eaten (EX). Milky sap poisonous (BS).

d. Elena A. de Xochigua, MG, Rutilio Olmos, Bartolo Simbrón.

e. Another plant, same Spanish name (no specimen) used as whooping cough remedy (MG); root (presumably of other plant) split and necklace made of pieces, likewise as cure for whooping cough (RO).

275. *Zacate colorado.*

a. ličikíni sákat; ¢u¢ɔkɔt sákat. (sákat, *zacate?*).

b. *Imperata contracta* (H. B. K.) Hitchc. Determined by J. R. Swallen. Grown from transplanted runners, in maize field (LX).

c. Used as thatch, but "too dry" for fodder (LX).

d. Lorenzo Xochigua, MG, José María García.

e. A wild form, *zacate colorado cimarrón*, of no utility (MG); used as thatch (JMG).

276. *Cilantro extranjero.*

a. No Totonac name.

b. *Eryngium foetidum* L. Cultivated from seed, or small volunteers transplanted; available throughout year.

c. Used as seasoning.

d. MG.

e. Despite name, informant considers plant native.

277. *Tabaco criollo.*

a. aškut.

b. *Nicotiana* sp., probably *N. tabacum* L. Not raised locally.

c. A curiosity in one Tajín garden.

d. MG.

278. *Calabaza de bola.*

a. nipˀši šamaktankolɔlɔ.

b. *Cucurbita moschata* Duch. Determined by L. H. Bailey. Cultivated.

c. Fruit eaten (p. 136).

d. MG.

e. See also No. 273, same species.

279. See No. 71.

280. See No. 222.

281. *Bella.*

a. Presumably no Totonac name.

b. *Zinnia elegans* Jacq. Said to be introduced; apparently escaped from cultivation.

c. "Only a flower"; no utility.

d. Pedro Pérez.

282. *Mango.*

a. mango (*sic*).

b. *Mangifera indica* L. Fruit tree cultivated in house clearings, maize fields; only one kind occurs locally.

c. Edible fruit; not produced in salable quantity.

d. MG.

283. *Guapilla.*

a. mu·ta.

b. *Bromelia karatas* L. (?). Determined by Lyman B. Smith.

c. Ripe fruit edible; also used as base for fermented drink (p. 164).

d. MG.

284. *Pichoco.*

a. λałni; λaλni.

b. *Erythrina americana* Mill. *Monte* tree (AM); but also grown from cuttings in house clearing (MG).

c. Blossom edible (p. 162).

d. AM, MG.

285. Unknown to informant.

a. ku·laš (Spanish *col?*).

b. *Brassica oleracea* L. var. *tronchuda* Bailey. Occasionally cultivated in maize fields.

c. Edible (p. 162) but regarded without enthusiasm.

d. MG.

286. Unknown to informants.

a. súyuˀ

b. *Ipomaea purga* (Wenderoth) Hayne. Vine; volunteer in abandoned maize fields, along arroyos, or in humid ground.

c. In Talaxca, leaves eaten with beans (ML) (pp. 161–162); apparently not used in Tajín (MG).

d. ML, MG.

e. This the famous Jalapa purge; laxative qualities not recognized in Tajín.

287. *Palo de lodo.*

a. pu·tunún kiwi.

b. *Eupatorium daleoides* (DC.) Hemsl.

c. Flower used as altar decoration; poles, as house walls and roof frame.

d. MG.

288. *Zacate de venado.*

a. iššakátˀjukiˀ (jukiˀ, *venado*).

b. *Imperata brasiliensis* Trin. Determined by J. R. Swallen. Troublesome weed in maize fields.

c. No utility.

d. MG.

e. "Looks like *zacate colorado* (No. 275) but is not."

289. *Noche buena.*

a. pastúšʌn.

b. *Euphorbia pulcherrima* Willd. Cultivated; no wild form.

c. Used as altar decoration on Christmas Eve.

d. MG.

290. *Ciruelo rojo.*

a. ¢u¢ɔqɔ stata; šá¢u¢ɔkɔ skatan (šá¢u¢ɔkɔ, *rojo;* skatan, *ciruelo*).

b. *Spondias purpurea* L. Grown from cuttings in house clearings.

c. Raw fruit edible.

d. MG.

e. See also Nos. 291 and 292, same species.

291. *Ciruelo campechano.*

a. campečano (*sic*).

b. *Spondias purpurea* L. Grown from cuttings in house clearing or milpa.

c. Fruit edible.

d. MG.

e. Fruit yellow, but smaller than succeeding (No. 292). Because of name, informant supposes this to be native of Campeche. See also Nos. 290 and 292.

292. *Ciruelo amarillo.*

a. smukuko skatan (smukuko, *amarillo; skatan, ciruelo*).

b. *Spondias purpurea* L. Grown from cuttings in house clearing; "if planted in milpas, birds eat the fruit."

c. Raw fruit edible (MG). Remedy for heat rash "caused by bathing in afternoon during hot weather": young, green leaves rubbed on affected area (MM, EX); leaves added to bath water (EX). Remedy for boils and hives: four special baths (see No. 72) (ML).

d. MG, Mercedes Morales, Elena A. de Xochigua, ML.

e. Remedy for heat rash may apply also to other *ciruelos;* informants not specific. Remedy for pustules and hives presumably refers to *ciruelo amarillo*, although it may as well apply to *rojo*. See also Nos. 290 and 291.

293. See No. 189.

294. See No. 203.

295. *Lágrimas de San Pedro.*

a. išlakaštajat *San Pedro.*

b. *Coix lacryma-jobi* L. Wild along arroyos; cultivated in house clearings; successfully (MG); unsuccessfully, for lack of moisture (EX).

c. Seeds used for rosary beads [probably not locally], and necklaces made by children (MG).

d. MG, Elena A. de Xochigua.

296. See No. 88.

297. *Frijol de cuerno.*

a. See p. 135 for discussion of names.

b. Dubiously, *Vigna sinensis* (L.) Savi. Seed specimen identified by Hugh Cutler as *Vigna unguiculata* (L.) Walp. (p. 135). Cultivated.

c. Edible.

d. Lorenzo Xochigua.

298. *Frijol amarillo; lenteja* (*sic*).

a. paluwa siqˀ (*tripa de ratón*).

b. *Phaseolus calcaratus* Roxb. Seed similarly identified by Hugh Cutler. Cultivated; introduced ca. 15 years ago from highlands.

c. Edible.

d. Lorenzo Xochigua, MG.

299. *Cabeza de negro.*

a. šaqšákat λeλákat; šašáqa tiλáke (šašáqa, *negro;* tiλáke, *cabeza*).

b. *Dioscorea alata* L. "Grows anywhere." Tuberous root or aerial tubers planted.

c. Aerial tubers eaten (pp. 138, 156).

d. Lorenzo Xochigua.

300. *Zacual cultivado.*

a. pokeˀ.

b. *Crescentia cujete* L.

c. Shell of fruit used as receptacle.

d. MG, Pedro García.

e. Informants distinguish between plants producing globular and elongated fruit; but Spanish and Totonac names identical, and both determined as same species. Same as No. 303.

301. *Tobe; tubos.* Not generally known to informants.

a. aksˀke.

b. *Aechmea mexicana* Bak. Determined by Lyman B. Smith.

c. Spiny leaf used to channel chicle from *zapote chico* (No. 191) into vessel (LX). Plant contains liquid which may be drunk to quench thirst. Root formerly used for brooms (MG).

d. Lorenzo Xochigua, MG.

e. This said to be "female;" No. 302 considered male.

302. *Tobe; tubos.*

a. aksˀke.

b. *Aechmea bracteata* (Sw.) Griseb. Determined by Lyman B. Smith.

c. See No. 301.

d. Lorenzo Xochigua, MG.

e. Considered "male" form.

303. See No. 300.

304. See No. 71.

305. *Bejuco sarnoso.*

a. s·kau.

b. *Marsdenia macrophylla* (H. & B.) Fourn. *Monte alto* vine.

c. Milky sap used as adhesive for paper, altar decorations; and for paper stars, and lanterns at Christmas.

d. MG.

e. See ftn. 14, p. 84.

306. *Malanga.*

a. lo·kˀ.

b. Probably *Xanthosoma* sp.

c. No utility.

d. MG.

307. *Manzanilla.*

a. No Totonac name.

b. *Helenium quadridentatum* Labill. Wild.

c. Sprays used as broom for sweeping flea-ridden spots; flowers' strong odor kills or drives away fleas.

d. MG, Juan Castro, Luis Patiño.

308. *Palmito.*

a. Unknown to informants.

b. Not determinable. Cultivated in gardens.

c. Ornamental only.

d. Juan Castro, MG.

309. *Yerba amargosa.*

a. Unknown to informants.

b. *Parthenium hysterophorus* L. Determined by Reed C. Rollins. Not cultivated.

c. Used to make brooms (BR).

d. Benita Ramos, MG.

e. Latter informant denies this is *yerba amargosa;* knows neither Totonac nor Spanish name.

310. See No. 182.

311. *Coyolillo de ratón.*

a. išmokó¢i·yak.

b. *Priva lappulacea* (L.) Pers. Wild; weed which endangers maize fields.

c. No utility.

d. MG.

312. *Frijol tripa de tuza.*

a. išpaluwa sa·ka. (paluwa, *tripa;* sa·ka, *tuza*).

b. *Vigna* sp. Seed determined by Hugh Cutler as *Vigna unguiculata* (L).) Walp. Cultivated; considered native.

c. Edible.

d. Lorenzo Xochigua, MG.

313. *Cacahuate.*

a. No Totonac name.

b. ***Arachis hypogaea*** L. Cultivated in one garden.

c. Effectively unknown in Tajín.

d. Juan Castro, Flora García.

314. Unknown to informants.

a. limaštákan (*palo para pintura*).

b. Not determinable.

c. Used by girls to encourage growth of hair: leaves macerated in water and liquid used as shampoo rinse (LX). Used as magical "cure" for Negrito and Huahua dancers (DS, MB). Leaves used as blue dye for clothing and pottery vessels (EB, ML).

d. Lorenzo Xochigua, Donato Santes, MG, Esteban Bautista, ML.

e. Taxonomist believes this the same as No. 212.

315. *Chataya.*

a. čáta.

b. Not determinable. Wild shrub; "grows anywhere." Produces small black, globular fruit.

c. Raw fruit edible.

d. MG.

e. Informant distinguishes between this and another plant of same name which produces similar fruit.

316. *Epazote del zorrillo.*

a. kašni ʌ̇sʌ.

b. ***Petiveria alliacea*** L. Wild.

c. Remedy for children suffering from "fright" or magical contact with dead, evidenced by sleepiness and night sweats. Leaves placed on coals and child held in smoke; then alcohol sprayed from mouth on green leaves; latter macerated well and rubbed over entire body. Cure may be undertaken by anyone, not necessarily a shaman (MG, LX). Remedy for flatulence: tea made of plant (ML).

d. MG, Lorenzo Xochigua, ML.

317. *Ruda.*

a. ruda (*sic*).

b. ***Ruta graveolens*** L. Cultivated in house clearings.

c. General tonic: "punch" with rue flavor (p. 164).

d. Lorenzo Xochigua.

318. *Albahaca.*

a. Not recorded.

b. ***Ocimum*** sp. Cultivated in house clearings.

c. Sprays used as body whip in sweat bath. Sprays boiled and liquid used as ordinary bath; also as bath following childbirth (LX); and in bath of seven herbs (No. 15). Remedies for magical *malviento*: water boiled with *albahaca*; liquid used as bath (LX, MG). Face brushed with sprays and latter thrown away (BR).

d. Lorenzo Xochigua, MG, Benita Ramos.

e. See also No. 319.

319. *Albahaca.*

a. Not recorded.

b. ***Ocimum micranthum*** Willd. Presumably cultivated.

c. Used as substitute for No. 318. Leaves burned beneath cradle of child affected with *malviento* (MG).

d. Lorenzo Xochigua, MG.

e. First informant calls this ***albahaca sencilla***, "not the same" as No. 318.

320. *Zarzilla.*

a. pašmaltúku.

b. ***Smilax spinosa*** Mill.

c. Presumably no utility.

d. Manuel de la Luz.

321. Unknown to informant.

a. pusumá kiwiʔ; pusumátkiwi.

b. ***Guatteria*** sp. Small tree or shrub in ***monte alto;*** formerly more plentiful than at present.

c. Used for roof withes; now being replaced by more abundant *capulin* (Nos. 21, 85).

d. MG.

322. Unknown to informant.

a. katékš kiwiʔ.

b. ***Prunus samydoides*** Schlecht. ***Monte alto*** shrub.

c. Used as roof poles.

d. MG.

323. *Huele de noche, negro.*

a. sanʔtipúskat.

b. ***Solanum nudum*** H. B. K.

c. Used in bath of seven herbs (No. 15) [presumably interchangeable with No. 80].

d. MG.

324. *Moral; mora.*

a. čičítiʔ: čičíʔti

b. ***Chlorophora tinctoria*** (L.) Gaud. ***Monte alto*** tree.

c. Wood used as house posts and for uprights (not cogs) of wooden sugar mill (MG). Limited use as yellow dye (PP, MM).

d. MG, Pedro Pérez, Mercedes Morales.

325. *Mozote blanco.*

a. štuyuʔ.

b. ***Bidens pilosa*** L. var. ***radiata*** Sch.-Bip. Harmful weed in maize fields.

c. No utility.

d. MG.

e. See No. 20.

326. *Guayabo.*

a. a˙siwit.

b. ***Psidium guajava*** L. ***Monte*** fruit tree; occasionally cultivated in maize fields and house clearings; by some, considered exclusively a volunteer.

c. Fruit edible (MG). Remedy for mild stomach ache: tea described under No. 41. This tea "weaker" than that of *pata de vaca* (No. 69) (AM).

d. MG, AM.

327. *Capulin de sabana.*

a. aktaláuwat.

b. ***Parathesis serrulata*** (Sw.) Mey. Wild along arroyos.

c. Fruit edible.

d. MG.

328. *Rosedal.*

a. No Totonac name.

b. ***Lawsonia inermis*** L. Cultivated in house clearing.

c. Flower used as altar decoration; young girls decorate their hair with a spray.

d. MG.

329. *Cruceta.*

a. kulu˙sˀtúkun šaláqsuˀ (kulu˙sˀ, *cruz;* túkun, *espina;* šaláqsuˀ, *chico*).

b. *Randia xalapensis* Mart. & Gal. Wild shrub.

c. No utility.

d. MG.

e. Not to be confused with No. 175, same Spanish name.

330. *Huesillo.*

a. kuyú kiwiˀ.

b. Probably *Wimmeria concolor* Schlecht. & Cham. *Monte alto* tree.

c. Wood used for digging stick, roof poles, and fuel.

d. MG.

331. *Camote del tlacuache.*

a. išmantaštán (manta, *camote*).

b. *Stigmatophyllum humboldtianum* (DC.) Jacq.

c. No utility.

d. MG.

332. *Limón.*

a. limúnʌš (*sic*).

b. *Citrus aurantifolia* (Christmann) Swingle. Cultivated fruit tree.

c. Fruit edible.

d. MG.

333. *Friega platos.*

a. patsumakášil.

b. *Callicarpa acuminata* H. B. K. Wild.

c. Leaves used to scour greasy plates.

d. MG.

334. See No. 244.

335. See No. 131.

336. *Carrizo del ratón.*

a. iškatičiya.

b. *Lasiacis divaricata* (L.) Hitchc. Wild.

c. Hollow "cane" used formerly as pipe stem.

d. MG.

337. *Guasimilla.*

a. čékait.

b. *Trema micrantha* (L.) Blume.

c. Wood used for house beams and roof poles.

d. MG.

338. *Escolín.*

a. skolín.

b. Not determinable. *Monte alto* tree.

c. Wood used for house posts; slender trunks as beams in native house.

d. MG.

339. *Gurupillo.*

a. pi·ja.

b. *Couepia dodecandra* (DC.) Hemsl. Cultivated in house clearing, occasionally in milpa.

c. Ripe fruit eaten raw.

d. MG.

340. *Sanatoros.*

a. ta·šak.

b. *Cissus sicyoides* L. Vine; "grows anywhere."

c. Medicinal: stem laid on coals to release liquid; latter applied to pimples to bring them to a head.

d. MG.

341. See No. 80.

342. *Palo blanco.*

a. saqáqakiwi (saqáqa, *blanco;* kiwi, *palo*).

b. Probably *Acalypha leptopoda* Muell. Arg. Shrub.

c. Wood used as fuel (MG); to make baseball bats (AB).

d. MG, Antonio Bautista.

e. Informant distinguishes between this shrub and a tree of same Spanish and Totonac names, the wood of which used for ax handles and in house construction; its fruit eaten by wild pheasants.

343. See No. 141.

344. *Mirasol.*

a. pučičinišánat (čičini, *sol*, šánat, *flor*).

b. *Tithonia diversifolia* (Hemsl.) A. Gray. Cultivated in house clearings.

c. Flower used to decorate altar.

d. MG.

e. Not to be confused with No. 120, tree with same Spanish and Totonac names.

345. *Hule.*

a. ¢akat.

b. *Castilla elastica* Cerv. Wild.

c. See text (pp. 83–84).

d. Nemesio Martínez, José María García.

346. Name unknown.

a. Name unknown.

b. *Cassia fruticosa* Mill. Wild.

c. Use unknown.

d. Specimen collected without aid of informants.

347. *Cachichín* (*sic*).

a. kačičín.

b. *Oecopetalum mexicanum* Greenm. & Thompson. Verified by R. A. Howard. Reputedly cultivated by Totonac of Misantla area.

c. Fruit said to be important food item in Misantla zone.

d. Specimen provided through kindness of Ing. José García Payón.

e. Not found in Tajín as far as we know; no details concerning cultivation or preparation of food.

348. *Cabeza de hormiga.*

a. čakčakanč˙an.

b. *Teucrium cubense* Jacq. subsp. *chamaedrifolium* (Mill.) Epl.

c. Presumably no utility.

d. MG.

e. See No. 166, same species identified by another informant.

349. *Abalo blanco.*

a. saqaka akti.

b. *Bumelia* sp., probably *B. persimilis* Hemsl. *Monte alto* tree; not found in abandoned milpas.

c. Freshly extracted latex used to adulterate chicle (No. 191) (NM).

d. Nemesio Martínez, MG.

e. First informant distinguishes between *ábalo blanco* and *negro* (siksaka akti); latter produces no chicle but its hard wood said to be used in making musical instruments (not locally). See also No. 152, which informants consider distinct.

350. *Zapote mamey.*

a. ličukut'ja·ka.

b. *Calocarpum sapota* (Jacq.) Merr. Cultivated.

c. Edible fruit.

d. Nemesio Martínez.

351. *Zacate fino de gallina.*

a. No Totonac name.

b. *Cynodon dactylon* (L.) Pers. Determined by J. R. Swallen. Weed in maize fields. Also cultivated from seed in house clearings, to feed fowl.

c. Poultry eats seeds.

d. MG, Nemesio Martínez.

352. *Zacate fino.*

a. stumtisakat.

b. *Leptochloa virgata* (L.) Beauv. Determined by J. R. Swallen. Wild; troublesome weed in maize fields.

c. Used as fodder.

d. Nemesio Martínez.

353. *Zacate de elote.*

a. takλa sakat.

b. *Panicum fasciculatum* Sw. Determined by J. R. Swallen. Troublesome weed in maize fields.

c. No utility.

d. Nemesio Martínez, MG.

354. See No. 58.

355. *Malva de bolita.*

a. No Totonac name.

b. *Sida rhombifolia* L. Weed in maize fields.

c. No utility.

d. Bernabé Xochigua.

356. See No. 93.

357. *Zacate grama.*

a. pašma sakat.

b. *Paspalum conjugatum* Berg var. *pubescens* Doell. Determined by J. R. Swallen. Wild along trails; not a threat to maize field.

c. Fodder.

d. Nemesio Martínez.

358. Unknown to informant.

a. nakaiya.

b. Probably *Ipomaea* sp. Wild vine; flower said by one informant to be white, by another to be purple.

c. Stem cut into pieces and added to rubber latex (No. 345) as coagulating agent; no cooking required.

d. Magdaleno Méndez.

359. *Chipila.*

a. čipilanin (*sic*).

b. *Crotalaria incana* L. Wild.

c. No utility.

d. Rutilio Olmos.

e. See No. 91.

360. *Sandia del ratón; sandia de la lagartija.*

a. Not recorded.

b. *Melothria* sp. Determined by L. H. Bailey. Troublesome weed in maize fields.

c. No utility.

d. Bernabé Xochigua.

361. *Melón.*

a. Not recorded.

b. *Cucumis melo* L. var. *chito* Naud. Determined by L. H. Bailey. Cultivated in milpa.

c. Ripe fruit eaten raw.

d. Mauro Pérez.

362. *Palma coyol; coyol.*

a. mɔkɔtʔ.

b. Probably *Acrocomia mexicana* Karw. Determined by L. H. Bailey. Wild; spared when fields are cleared.

c. Nuts eaten by children; oil very rarely used in cooking. Formerly palm nut hollowed and used as pipe bowl (p. 176).

d. Unaccompanied by informant when specimen collected.

363. *Zacate salado.*

a. skoko sakat.

b. *Leptochloa filiformis* (Lam.) Beauv. Determined by J. R. Swallen. Troublesome weed in maize fields.

c. No utility except possibly (?) as fodder.

d. Nemesio Martínez, Bartolo Simbrón.

e. According to informants, two weeds most harmful to maize fields are this and *zacate fino* (No. 352).

364. *Palma real.*

a. Not recorded.

b. *Scheelea liebmannii* Becc. Determined by L. H. Bailey.

c. Used for house thatch, and woven palm figures for altar ornament.

d. Unaccompanied by informant when specimen collected.

365. *Gallinitas.*

a. sikínsut.

b. *Canavalia villosa* Benth. Wild.

c. Children make whistles from united filaments of stamens.

d. ML.

366. *Bazo de venado.*

a. Not recorded.

b. *Passiflora coriacea* Juss.

c. Remedy for earache: leaf roasted and juice squeezed into ear.

d. ML.

e. By another informant, same species given different Spanish name and distinct use; see No. 244.

367. Unknown to informants.

a. laqaštʌkuʔ.

b. *Pithecellobium* sp. (?).

c. No utility.

d. ML, MG.

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Asclepias curassavica L	Asclepiadaceae	274
Bambusa aculeata	Gramineae	180
Bauhinia dipetala Hemsl	Leguminosae	189
Bauhinia divaricata L	Leguminosae	69
Bauhinia sp	Leguminosae	189
Bidens pilosa L. var. radiata Sch.-Bip	Compositae	20, 325
Bixa orellana L	Bixaceae	78
Bletia purpurea (Lam.) DC	Orchidaceae	142
Bocconia frutescens L	Papaveraceae	145
Bomarea edulis (Tuss.) Herb. (?)	Alstroemeriaceae	242
Bombax ellipticum H. B. K	Bombacaceae	153
Bourreria huanita (La Llav. & Lex.) Hemsl	Boraginaceae	117
Brassica nigra (L.) Koch	Cruciferae	102
Brassica oleracea L. var. tronchuda Bailey	Cruciferae	285
Bromelia karatas L. (?)	Bromeliaceae	283
Brosimum alicastrum Sw	Moraceae	98
Brunfelsia americana L	Solanaceae	129
Bumelia persimilis Hemsl. (?)	Sapotaceae	152, 349
Bumelia sp	Sapotaceae	349
Bunchosia biocellata Schlecht	Malpighiaceae	213
Bursera simaruba (L.) Sarg	Burseraceae	228
Caesalpinia pulcherrima (L.) Sw	Leguminosae	115
Caesalpinia sp	Leguminosae	55
Cajanus cajan (L.) Millsp	Leguminosae	95
Calea zacatechichi Schlecht	Compositae	82
Calliandra houstoniana (Mill.) Standl	Leguminosae	1
Callicarpa acuminata H. B. K	Verbenaceae	333
Calocarpum sapota (Jacq.) Merr	Sapotaceae	350
Calyptranthes schiedeana Berg	Myrtaceae	208
Canavalia villosa Benth	Leguminosae	365
Capparis baducca L	Capparidaceae	141
Capsicum annuum	Solanaceae	214
Capsicum frutescens L	Solanaceae	214
Carica papaya L	Caricaceae	172
Carpodiptera ameliae Lundell	Tiliaceae	206
Cassia fruticosa Mill	Leguminosae	346
Castilla elastica Cerv	Moraceae	345
Cedrela mexicana M. Roem	Meliaceae	219

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Ceiba pentandra (L.) Gaertn	Bombacaceae	14
Celtis monoica Hemsl	Ulmaceae	190
Centrosema plumieri Benth	Leguminosae	178
Cestrum nocturnum L	Solanaceae	80
Chamaedorea sartorii Liebm	Palmae	97
Chenopodium ambrosioides L	Chenopodiaceae	75
Chlorophora tinctoria (L.) Gaud	Moraceae	324
Cissampelos pareira L	Menispermaceae	42
Cissus sicyoides L	Vitaceae	340
Citrus aurantifolia (Christmann) Swingle	Rutaceae	332
Clerodendron fragrans Vent. var. pleniflora Schauer	Verbenaceae	35
Cnidoscolus multilobus (Pax) I. M. Johnston	Euphorbiaceae	56
Coccoloba schiedeana Lindau	Polygonaceae	65
Cochlospermum vitifolium (Willd.) Spreng	Cochlospermaceae	120
Codiaeum variegatum Blume	Euphorbiaceae	256
Coffea arabica L	Rubiaceae	161
Coix lacryma-jobi L	Gramineae	295
Corchorus siliquosus L	Tiliaceae	58
Costus spicatus (Jacq.) Sw	Zingiberaceae	158
Couepia dodecandra (DC.) Hemsl	Rosaceae	339
Crescentia cujete L	Bignoniaceae	300
Crotalaria incana L	Leguminosae	359
Crotalaria longirostrata Hook. & Arn	Leguminosae	91
Croton draco Schlecht	Euphorbiaceae	239
Croton reflexifolius H. B. K	Euphorbiaceae	114
Cucumis melo L. var. chito Naud	Cucurbitaceae	361
Cucurbita moschata Duch	Cucurbitaceae	273, 278
Cucurbita moschata Poiret	Cucurbitaceae	273
Cucurbita sp	Cucurbitaceae	148
Cuscuta corymbosa R. & P. var. stylosa (Choisy) Engelm	Convolvulaceae	31
Cydista aequinoctialis (L.) Miers	Bignoniaceae	40
Cydista potosina (K. Schum. & Loes.) Loes	Bignoniaceae	133
Cynodon dactylon (L.) Pers	Gramineae	351
Datura candida (Pers.) Pasquale	Solanaceae	34
Dendropanax arboreus (L.) Dec. & Planch	Araliaceae	84
Desmodium axillare (Sw.) DC. var. genuina	Leguminosae	263
Desmodium canum (Gmel.) Schinz & Thell	Leguminosae	263
Dioscorea alata L	Dioscoreaceae	299
Dioscorea convolvulacea Cham. & Schlecht. (?)	Dioscoreaceae	147
Dioscorea floribunda Mart. & Gal	Dioscoreaceae	147
Dioscorea macrostachya Benth	Dioscoreaceae	109
Dioscorea sp	Dioscoreaceae	109, 147
Diospyros ebenaster Retz	Ebanaceae	125
Dorstenia contrajerva L	Moraceae	146
Drepanocarpus lunatus (L. f.) Meyer	Leguminosae	200
Enallagma sp	Bignoniaceae	132
Epidendrum condylochilum Lehm. & Kränz	Orchidaceae	140
Eryngium deppeanum Schlecht. & Cham	Umbelliferae	139
Eryngium foetidum L	Umbelliferae	276
Erythrina americana Mill	Leguminosae	284
Erythrina herbacea L	Leguminosae	121
Eugenia capuli (Schlecht. & Cham.) Berg	Myrtaceae	41, 85
Eugenia trunciflora (Schlecht. & Cham.) Berg	Myrtaceae	173
Eupatorium albicaule Sch.-Bip	Compositae	212, 314
Eupatorium daleoides (DC.) Hemsl	Compositae	287
Eupatorium odoratum L	Compositae	265
Euphorbia pulcherrima Willd	Euphorbiaceae	289
Exothea copalillo (Schlecht.) Radlk	Sapindaceae	205
Ficus glaucescens (Liebm.) Miq	Moraceae	222

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Ficus tecolutlensis (Liebm.) Miq	Moraceae	221
Foeniculum vulgare Mill	Umbelliferae	88
Gliricidia sepium (Jacq.) Walp	Leguminosae	123
Gonolobus niger (Cav.) R. Br	Asclepiadaceae	124
Gossypium barbadense L	Malvaceae	43
Gossypium hirsutum L	Malvaceae	8
Gossypium hirsutum L. var. punctatum (Schumacher) J. B. Hutchinson.	Malvaceae	9
Gouania polygama (Jacq.) Urb	Rhamnaceae	202
Guadua aculeata Rupr	Gramineae	180
Guatteria sp	Annonaceae	321
Guazuma ulmifolia Lam	Sterculiaceae	218
Hamelia erecta Jacq	Rubiaceae	87
Hampea integerrima Schlecht	Bombacaceae	100
Helenium quadridentatum Labill	Compositae	307
Heliconia schiedeana Kl	Musaceae	128
Heliocarpus americanus L	Tiliaceae	25
Heliotropium angiospermum Murr	Boraginaceae	39
Hibiscus abelmoschus L	Malvaceae	33
Hyptis verticillata Jacq	Labiatae	48
Imperata brasiliensis Trin	Gramineae	288
Imperata contracta (H. B. K.) Hitchc	Gramineae	275
Inga leptoloba Schlecht	Leguminosae	181
Inga paterno Harms	Leguminosae	195
Ipomaea batatas (L.) Lam	Convolvulaceae	260
Ipomaea mutabilis Lindl	Convolvulaceae	73
Ipomaea purga (Wenderoth) Hayne	Convolvulaceae	286
Ipomaea sp	Convolvulaceae	63, 358
Iresine interrupta Benth	Amaranthaceae	174
Jacobinia spicigera (Schlecht.) L. H. Bailey	Acanthaceae	45
Jacobinia umbrosa (Benth.) Blake (?)	Acanthaceae	270
Jacquinia aurantiaca Ait	Theophrastaceae	46
Jatropha curcas L	Euphorbiaceae	192
Kalanchoë pinnata (Lam.) Pers	Crassulaceae	211
Lantana camara L	Verbenaceae	15
Lasiacis divaricata (L.) Hitchc	Gramineae	336
Lawsonia inermis L	Lythraceae	328
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Leucaena glauca (L.) Benth	Leguminosae	38, 196a
Leucaena pulverulenta (Schlecht.) Benth	Leguminosae	38
Licania platypus (Hemsl.) Fritsch	Rosaceae	90
Licaria capitata (Schlecht. & Cham.) Kosterm	Lauraceae	169
Lippia dulcis Trev	Verbenaceae	150
Lippia myriocephala Schlecht. & Cham	Verbenaceae	241
Lobelia berlandieri A. DC	Lobeliaceae	59
Lobelia cliffortiana L	Lobeliaceae	59
Lycopersicon esculentum Mill	Solanaceae	24
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Malvaviscus arboreus Cav	Malvaceae	18
Mammea americana L	Guttiferae	127
Manfreda sp	Agavaceae	122
Mangifera indica L	Anacardiaceae	282
Manihot esculenta	Euphorbiaceae	240
Maranta arundinacea L. (?)	Marantaceae	227
Marsdenia macrophylla (H. & B.) Fourn	Asclepiadaceae	305
Melloa populifolia (DC.) Bur	Bignoniaceae	131
Melloa sp	Bignoniaceae	131
Melothria sp	Cucurbitaceae	360

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Muntingia calabura L	Elaeocarpaceae	37
Myriocarpa cordifolia Liebm	Urticaceae	268
Nectandra salicifolia (H. B. K.) Nees	Lauraceae	130
Nicotiana sp. (probably N. tabacum L.)	Solanaceae	277
Ocimum micranthum Willd	Labiatae	319
Ocimum sp	Labiatae	318
Odontonema callistachyum (Schlecht. & Cham.) Kuntze	Acanthaceae	237
Oecopetalum mexicanum Greenm. & Thompson	Icacinaceae	347
Operculina ornithopoda (Robins.) House	Convolvulaceae	209
Pachira aquatica Aubl	Bombacaceae	167
Panicum fasciculatum Sw	Gramineae	353
Panicum maximum Jacq	Gramineae	245
Panicum purpurascens Raddi	Gramineae	243
Parathesis serrulata (Sw.) Mey	Myrsinaceae	327
Parmentiera edulis DC	Bignoniaceae	10
Parthenium hysterophorus L	Compositae	309
Paspalum conjugatum Berg var. pubescens Doell	Gramineae	357
Passiflora coriacea Juss	Passifloraceae	244, 366
Passiflora foetida L. var. hastata (Bertol.) Mast	Passifloraceae	51
Passiflora serratifolia L	Passifloraceae	162
Paullinia clavigera Schlecht. (?)	Sapindaceae	207
Paullinia tomentosa Jacq	Sapindaceae	52
Pereskia grandifolia Haw	Cactaceae	177
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Perymenium gymnolomoides (Less.) DC	Compositae	234
Petiveria alliacea L	Phytolaccaceae	316
Petrea volubilis L	Verbenaceae	201
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Pimenta officinalis Lindl	Myrtaceae	30
Piper berlandieri C. DC. (?)	Piperaceae	2
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Pithecellobium arboreum (L.) Urb	Leguminosae	193
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Polygala sp	Polygalaceae	165
Porophyllum ruderale (Jacq.) Cass	Compositae	5
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Rivina humilis L	Phytolaccaceae	54
Rourea glabra H. B. K	Connaraceae	112
Russelia campechiana Standl	Scrophulariaceae	271
Ruta graveolens L	Rutaceae	317
Sabal mexicana Mart	Palmae	259
Salmea scandens (L.) DC	Compositae	49
Salvia coccinea Juss. ex Murr	Labiatae	81
Sapindus saponaria L	Sapindaceae	266
Scheelea liebmannii Becc	Palmae	364
Schoepfia schreberi Gmel	Olacaceae	7
Sclerocarpus schiedeanus B. & H	Compositae	110
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Sebastiana sp. (?)	Euphorbiaceae	99
Senecio confusus Britten	Compositae	236
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Sida rhombifolia L	Malvaceae	355
Smilax aristolochiaefolia Mill	Liliaceae	202, 252
Smilax mollis H. B. K	Liliaceae	215
Smilax spinosa Mill	Liliaceae	320
Solanum lanceifolium Jacq	Solanaceae	155
Solanum laurifolium Mill	Solanaceae	60
Solanum nigrum L	Solanaceae	6
Solanum nudum H. B. K	Solanaceae	323
Solanum verbascifolium L	Solanaceae	3
Sonchus oleraceus L	Compositae	93
Sorghum vulgare Pers	Gramineae	103
Sorghum vulgare Pers. var. technicum (Koern.) Fiori & Paoletti	Gramineae	103
Spondias mombin L	Anacardiaceae	186
Spondias purpurea L	Anacardiaceae	290, 291, 292
Stellaria ovata Willd	Caryophyllaceae	108
Stigmatophyllum humboldtianum (DC.) Jacq	Malpighiaceae	331
Swietenia macrophylla King	Meliaceae	194
Syngonium podophyllum Schott	Araceae	156
Tabebuia pentaphylla (L.) Hemsl	Bignoniaceae	171
Tabernaemontana citrifolia L	Apocynaceae	26
Tagetes patula L	Compositae	261
Terminalia catappa L	Combretaceae	262
Teucrium cubense Jacq. subsp. chamaedrifolium (Mill.) Epl	Labiatae	166, 348
Thevetia peruviana (Pers.) Schum	Apocynaceae	138
Tillandsia usneoides L	Bromeliaceae	267
Tithonia diversifolia (Hemsl.) A. Gray	Compositae	344
Tournefortia hirsutissima L	Boraginaceae	202
Trema micrantha (L.) Blume	Ulmaceae	337
Trichilia havanensis Jacq	Meliaceae	61
Triumfetta semitriloba Jacq	Tiliaceae	66
Trophis racemosa (L.) Urb	Moraceae	79
Vanilla pompona Schiede	Orchidaceae	23
Verbena ehrenbergiana Schauer	Verbenaceae	182
Verbesina lindenii (Sch.-Bip.) Blake	Compositae	53
Vernonia aschenborniana Schauer	Compositae	210
Vernonia tortuosa (L.) Blake	Compositae	52*a*
Vigna sinensis (L.) Savi. (?)	Leguminosae	297
Vigna unguiculata (L.) Walp	Leguminosae	297, 312
Vigna sp	Leguminosae	312
Vitis tiliaefolia H. & B	Vitaceae	187

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Xanthosoma sp. (?)	Araceae	4, 306
Yucca aloifolia L.	Agavaceae	230
Zebrina pendula Schnizl	Commelinaceae	113
Zingiber officinale Roscoe	Zingiberaceae	32
Zinnia elegans Jacq	Compositae	281
Zuelania roussoviae Pittier	Flacourtiaceae	28

MONTE ALTO TREES AND LIANAS

Modesto González has prepared a list of the trees and lianas he considers characteristic of *monte alto*. Below, they have been arranged in numerical order to correspond with the herbarium catalog.

Trees include: *chote* (No. 10), *ceiba* (No. 14), *palo de volador* (No. 28), *ubero* (No. 65), *palo de agua* (No. 84), *zapote cabello* (No. 90), *ojite* (No. 98), *ébano* (No. 152), *misanteca* (No. 169), *palo de rosa* (No. 171), *chijol* (No. 176), *jobo* (No. 186), *pipín* (No. 190), *zapote chico* (No. 191), *frijolillo* (No. 193), *caoba* (No. 194), *zapote de calentura* (No. 198), *alzaprima* (No. 206), akásʔti (No. 218), *cedro* (No. 219), *zapote mante* (No. 220), *higo* (No. 221), *higuera* (No. 222), *chaca* (No. 228), *moral* (No. 324), and *escolín* (No. 338).

For some obscure reason, he includes a yucca (No. 230) with the *monte alto* trees. For two of the latter, we have no specimens: *tenpesquite* (smukútkiwi) and *mocoquihui* (*sic*) (mukúkiwi).

On Don Modesto's list of lianas, the following appear: *ajillo* (No. 40), *bejuco blanco* (No. 73), *chilillo* (No. 112), *bejuco colorado* (No. 131), *bejuco real* (No. 133), *bejuco de parra* (No. 187), *capitas* (No. 200), *bejuco de San Diego* (No. 201), and *bejuco sarnoso* (No. 305). An additional vine, the *bejuco de Santa Catarina*, is not represented among our specimens.

APPENDIX D

BIRDS

In the course of our stay in Tajín, it turned out that Mr. Palerm was obtaining from Modesto González a good many isolated observations concerning local birds. Accordingly, a simple outline was prepared, and the two worked more or less systematically over a period of several days, the result being the list of birds which appears below.

It makes no pretense at completeness, but most of the common birds in the Tajín region appear to be included, as well as the vampire bat. Data are based on the informant's statements, with occasional supplementary comments from other individuals. For the sake of brevity, the original wording has been condensed in the course of translation.

The various birds are arranged in alphabetical order, under common Spanish name, and numbered. In one case (No. 17), the Spanish name is unknown.

Information is given according to the following key: *a*, Totonac name; *b*, translation; *c*, aspect; *d*, call; *e*, habits; *f*, food; *g*, how hunted; *h*, utility; *i*, beliefs; *j*, suggested identification. Omission of a letter indicates that we have no corresponding data. For entries under *j*, we are indebted to Dr. Starker Leopold, who read a first draft of the appendix and, on the basis of the descriptions, was kind enough to suggest a number of identifications.

Data concerning hunting and utility are summarized in table 21. In several instances (Nos. 12, 25, 27, 28), the bird is edible, but the informant has stated merely that the meat is smoked. Ordinarily, smoking is no more than a preservative measure, preliminary to further preparation. As a consequence, the table indicates that we do not know the final form in which the meat of these particular birds is served.

TABLE 21.—*Local birds*

No.	Name	Manner of hunting			Hunted for—								
					Various reasons				Food				
		Not hunted	Shotgun	Traps	Predatory, pest	Pet	Medicinal	Other magical beliefs	Broth	Stew	*Mole* sauce	Not specified	Not eaten
1	*Aguililla*	----	×	----	×	----	----	----	----	----	----	----	×
2	*Boberos*	----	×	----	----	----	----	----	----	×	----	----	----
3	*Calandria*	×	----	----	----	×	----	----	----	----	----	----	×
4	*Chachalaca*	----	×	----	----	----	----	----	×	×	×	----	----
5	*Chénchere*	----	×	----	×	----	----	----	----	----	----	×	----
6	*Cholinche*	----	×	×	×	----	----	----	----	----	----	----	×
7	*Chuparrosa*	----	----	----	----	----	×	----	----	----	----	----	----
8	*Clarín*	×	----	----	----	----	----	----	----	----	----	----	----
9	*Codorniz*	×	----	----	----	----	----	----	----	----	----	----	----
10	*Coquito*	----	×	×	----	----	----	----	×	----	----	----	----
11	*Cotorra*	----	×	×	----	×	----	----	----	----	----	×	----
12	*Garceta*	----	×	----	----	----	----	----	----	----	----	×	----
13	*Gavilán*	----	×	----	×	----	----	----	----	----	----	----	×
14	*Gavilán*	----	×	----	×	----	----	----	----	----	----	----	×
15	*Golondrina*	×	----	----	----	----	----	----	----	----	----	----	----
16	*Lechuza*	----	×	----	----	----	----	×	----	----	----	----	×
17	liquaλ	×	----	----	----	----	----	----	----	----	----	----	----
18	*Morrocoyo*	----	×	----	----	----	----	----	----	----	----	×	----
19	*Murciélago*	----	----	----	----	----	----	----	----	----	----	----	×
20	*Pájaro alegrón*	×	----	----	----	----	----	----	----	----	----	----	----
21	*Pájaro cardenal*	×	----	----	----	----	----	----	----	----	----	----	----
22	*Pájaro carpintero*	×	----	----	----	----	----	----	----	----	----	----	----
23	*Pájaro de verano*	×	----	----	----	----	----	----	----	----	----	----	----
24	*Paloma*	----	×	×	----	----	----	----	×	×	×	----	----
25	*Papán*	----	×	----	----	----	×	----	----	----	----	×	----
26	*Perdiz*	----	×	×	----	----	----	----	×	×	×	----	----
27	*Perico*	----	×	----	----	×	----	----	----	----	----	×	----
28	*Pito real*	----	×	----	----	----	----	----	----	----	----	×	----
29	*Pizcuyu* (*sic*)	×	----	----	----	----	----	----	----	----	----	----	----
30	*Primavera*	×	----	----	----	×	----	----	----	----	----	----	----
31	*Quebrantahuesos*	×	----	----	----	----	----	----	----	----	----	----	----
32	*Sinsonte*	×	----	----	----	----	----	----	----	----	----	----	----
33	*Tapacamino*	×	----	----	----	----	----	----	----	----	----	----	----
34	*Tecolote*	----	×	----	----	----	----	×	----	----	----	----	×
35	*Tecolotillo*	----	×	----	----	----	----	×	----	----	----	----	×
36	*Torcaza*	----	×	----	----	----	----	----	×	----	×	----	----
37	*Tordo*	----	×	----	×	----	----	----	×	----	----	----	----
38	*Tortolita*	----	×	×	----	----	----	----	×	×	×	----	----
39	*Totocalca*	----	×	×	----	----	----	----	----	×	×	----	----
40	*Vaquero*	----	×	----	×	----	----	----	----	----	----	----	×
41	*Zopilote*	----	×	----	----	----	×	----	----	----	----	----	----
42	*Zopilote rey*	×	----	----	----	----	----	----	----	----	----	----	----

1. *Aguililla.*

a. qua ˀiá akšupín.

b. akšupín, with crest; to differentiate from quaˀiá (*gavilán*, No. 14).

c. Size of zopilote (No. 41); looks like a *gavilán* (No. 13), but crest and plumage same color: brown, shot with white.

d. kuš kuš.

e. Current throughout the year; found in *monte.*

f. Poultry, birds.

g. Shotgun; to prevent preying upon domestic fowl.

h. None.

i. Its call announces a sunny day.

j. Probably crested eagle (*Spizaetus* sp.).

2. *Boberos.*

a. šmaštuna-*bobos.*

b. šmaštuna: "to open, permitting emergence"; *bobos:* a river fish. Free translation: open to let *bobos* emerge, because appearance of bird and fish coincident.

c. Size of hawk (No. 13 or No. 14); chocolate-colored plumage.

d. None.

e. Bird of passage, seen only in flocks. First appears in November, sometimes in December. Roosts on trees at night.

f. Fish.

g. Shotgun, while roosting.

h. Edible; strong fish flavor. Smoked and served also as stew (*huatape*).

j. Probably cormorant (*Phalacrocorax olivaceus*); possibly water turkey (*Anhinga anhinga*).

3. *Calandria.*

a. šukˀčaλ.

c. Size of *tortolita* (No. 38); black plumage, yellow breast.

d. Sings sweetly in early morning.

e. Current "everywhere," throughout the year; baglike nest hangs from trees.

f. Seeds and worms.

g, h. Not hunted. Sometimes young birds taken from nests, kept as pet songbirds, but do not grow.

j. Oriole (*Icterus* sp.).

4. *Chachalaca.*

a. špatá.

c. Size of *papán* (No 25); brown plumage, white-tipped tail.

d. wilˀpatá.

e. Current throughout the year; found in *monte.*

f. Vanilla blossoms; *palo blanco* seeds (Appendix C, No. 342).

g. Shotgun.

h. Edible. Tasty; chicken flavor; in broth, stew (*huatape*), or with *mole* sauce. Eggs sometimes collected, hatched by domestic hen; birds usually escape when able to fly, therefore sometimes eaten while still young.

j. Ortalis vetula.

5. *Chénchere.*

a. lekˀšú kokˀčiliλ.

b. lekˀšú, means small, to differentiate from the *pájaro carpintero* (No. 22). According to one informant there are two kinds of *chénchere:* akčili, which is small; kokčili, large with red crest.

c. Size of small dove (No. 38); mottled, with red head. Long feet and nails; no tail or crest. Another informant describes bird as having white "neckerchief."

d. kokˀčiliλ.

e. Current throughout the year, near cornfields.

f. Dry and green corn, wild chili, beans, etc.

g. Shotgun.

h. Edible, but usually killed because a milpa pest.

i. One informant says this bird pecks hard and continuously when it is going to rain.

6. *Cholinche.*

a. spitú.

c. Size of small dove (No. 38); black plumage.

d. José, José.

e. Current throughout the year, in *monte.*

f. Chili, sprouting corn seeds, dry maize.

g. Traps, shotgun.

h. Inedible. Hunted because a crop pest.

7. *Chuparrosa.*

a. junˀ.

c. Size of *pájaro alegrón* (No. 20); no tail; long, thin bill; dark gray plumage. One informant describes the bird as small, green.

d. Sings sweetly.

e. Current "everywhere," throughout the year.

f. Nectar from flowers; blossoms (*sic*) of orange, *manzanita,* and *liliake de venado* (both latter unidentified). When these foods out of season, "the bird endures hunger."

h. Medicinal; smoked and eaten as a cure for *alferesia* (unidentified illness). The eggs, taken raw, are said to cure heart pains, but must be eaten on Fridays only.

j. Hummingbird (may be one of 10 species).

8. *Clarín.*

a. kiλˀ¢ałanks.

b. Sonorous mouth (*boca que suena*).

c. Size of small dove (No. 38).

d. Bell-like; sings only in May.

e. Not plentiful.

g. Not hunted.

j. Thrush (*Myadestes unicolor* [?]).

9. *Codorniz.*

a. akčˀkúko.

c. Size of *paloma* (No. 24).

d. Whistles, saying; čačˀpankłus.

e. Current throughout the year, in hilly terrain.

f. Worms, fruit.

g. Not hunted.

i. Cry said to mean "foot of the cross" in Totonac, "because they are going to crucify Our Lord." As an afterthought, informant uncertain the *codorniz* sings thus.

j. Quail (probably one of the wood quails such as *Dactylortyx thoracicus*).

10. *Coquito.*

a. kokos.

c. Smaller than dove (No. 38); chocolate-colored plumage.

d. ko ko ko.

e. Current throughout the year, close to cornfields.

f. Corn, chili, *espino blanco* seeds (Appendix C, No. 62).

g. Traps, shotgun.

h. Edible in broth, or smoked (presumably preliminary to further preparation).

i. "When the Mexica were looking for a site for their capital, this bird sang 'teoi,' which in Mexicano means 'let's go.' " This anecdote told in Gildardo Muñoz by Constancio Reyes, a school teacher from Papantla.

11. *Cotorra.*

a. kɔčiyu.

b. None.

c. Size of male *tordo* (No. 37) ; green with red head.

e. Starts appearing in January and February; remains until June. Found in *monte.*

f. Tree seeds (*sic*).

g. Traps, shotgun.

h. Edible; also kept as caged pet and taught to speak.

i. "Incapable of learning Totonac."

j. Parrot (*Amazona* [?]).

12. *Garceta.*

a. loʔqó.

c. Size of *totocalca* (No. 39) ; long, thin legs, white plumage.

e. Appears in flocks during July and August; frequents small streams and ponds. Leaves at start of dry season.

f. Fish.

g. Shotgun.

h. Edible smoked (presumably preliminary to further preparation) ; "some like it."

j. Snowy egret (?).

13. *Gavilán.*

a. škíkin.

b. None.

c. Size of *golondrina* (No. 15) ; chocolate-colored plumage.

d. None.

e. Current throughout the year, in *monte.*

f. Preys on poultry.

g. Shotgun.

j. Hawk sp. (?).

14. *Gavilán.*

a. quaˀiá.

b. None.

c. Size of *tecolote* (No. 34) ; brown and white plumage.

d. kuč kuč kuč.

e. Current throughout the year, in *monte.*

f. Poultry.

g. Shotgun.

h. None; bird of prey.

j. Hawk sp. (?).

15. *Golondrina.*

a. akapupačna.

b. "They are cleaning the sky"; (*están limpiando el cielo*).

c. Size of small dove (No. 38) ; wings larger; chocolate-colored plumage.

d. piš.

e. Bird of passage; appears in rainy season (April–May).

g. Not hunted.

j. Swallow sp. (?).

16. *Lechuza.*

a. akapunímušni.

c. Size of *tecolote* (No. 34) ; chocolate-colored plumage.

d. Hisses: pis, pis.

e. "Travels alone"; appears with the mosquitoes"; never stays long in one place.

g. Shotgun. Occasionally hunted out of curiosity, and to stop call, which is an ill omen.

h. None.

i. "They live on air alone"; carry illness (fever and consumption) wherever they perch and hoot, but infirmity contracted only if their call is answered.

17. Unknown to informant.

a. liquaλ.

c. Size of *papán* (No. 25) ; orange-red plumage, white tail.

d. *Pedro.*

e. Current throughout the year, near cornfields.

f. Corn, fruit, seeds.

g. Not hunted.

18. *Morrocoyo.*

a. mutmut (*sic*).

c. Size of dove (No. 24) ; green breast, blue crest, black wings, and long, white-tipped tail.

d. mut-mut; according to one informant, the song is ugly.

e. Current "everywhere," throughout the year. Sleeps in holes burrowed in ground.

g. Shotgun.

h. Occasionally eaten.

i. According to one informant, this bird keeps a guardian snake in its hole; snake does not injure bird and protects it from other serpents.

j. Motmot(?).

19. *Murciélago.*

a. škita .

c. Black, with rodent face.

e. Enters the kitchen to eat brown sugar. Bites horses and pigs; sucks their blood and that of sleeping humans. "One bit Antonio Morales; he lost a great deal of blood."

f. Brown sugar, fruit, and blood.

j. Vampire bat.

20. *Pájaro alegrón.*

a. tanˀšilitˀ.

c. Very small and "round"; tailless; orange plumage, white-striped neck.

d. Whistles.

e. Current throughout the year, along roadsides and near cornfields.

g. Not hunted.

i. "They are happy because their song brings bad luck. For example, someone waits on the road to kill you; something has gone wrong at home—a child has been burned or has fallen." Another informant speaks of a bird of ill omen, called tan¢iλ; another apparently calls the same bird lipsewa or tan¢iλ.

21. *Pájaro cardenal.*

a. taˀtímuluˀ.

c. Size of *tortolita* (No. 38) ; the male red and crested; the female, orange-colored.

e. Current "everywhere," throughout the year.

g. Not hunted.

j. Cardinal (*Richmondena cardinalis*).

22. *Pájaro carpintero.*

a. šaʔlenqa kok čiliλ.

b. šaʔlenqa, large; to differentiate bird from *chénchere,* (No. 5).

c. Size of *papán* (No. 25); legs longer than those of the *chénchere;* nails long; tailless; black, with red crest.

d. min, min.

e. Current throughout the year, in bamboo thickets.

f. Wood borers found in rotten tree trunks; tests wood with bill, to determine if it is hollow.

g. Not hunted.

j. Woodpecker.

23. *Pájaro de verano.*

a. ličkiničpun, isiauanáʔ ičičiní.

b. First, summer bird; second uncertain, but čičiní, the term for sun.

c. Size of *paloma* (No. 24); black, with yellow breast. Another informant describes the back as green and blue; the breast, cream-colored.

d. Like a turkey's cry.

e. Current throughout the year, in *monte alto* and abandoned milpas; sings only in summer.

f. Worms, fruit.

g. Not hunted.

i. Its singing announces a period of intense heat.

j. (*Trogon* sp.).

24. *Paloma.*

a. tantašʔnan, tan¢u¢ná.

b. None.

c. Dark gray; white-tipped tail.

d. Coos.

e. Current "everywhere," throughout the year.

f. Seeds, especially *laurel* (Appendix C, No. 130): maize, chili, etc.

g. Traps, shotgun.

h. Edible. Meat good smoked, in broth, stew (*huatape*), and with *mole* sauce.

i. Owning and breeding these birds does not signify bad luck, according to one informant; but if a stray enters the house, sickness or death will follow. Or if there are young girls in the home, someone will ask for them in marriage. Hunted, not because they are malevolent; "they merely give warning."

j. White winged dove (*Zenaida asiatica*).

25. *Papán.*

a. paʔká.

b. None.

c. Size of *tordo* (No. 37); brown plumage.

d. pan, pan.

e. Current "everywhere," throughout the year. Nests in the early dawn, during February.

f. Green and dry corn, chili, beans, etc.

g. Shotgun.

h. Meat not good, although sometimes smoked (preliminary to further preparation?). Said to be infested with lice. Meat of yellow-bill *papán,* served in plain broth, will cure whooping cough.

j. Brown jay (?) (*Psilorhinus morio* [?]); called *pepe* elsewhere in Veracruz.

26. *Perdiz.*

a. čávełan (*sic*).

b. None.

c. Size of *totocalca* (No. 39), but heavier; tailless; chocolate-colored plumage.

d. Shrill whistle, when nesting in May and June.

e. Current throughout the year; in *monte.*

f. Corn, chili, beans, seeds, etc.

g. Traps, shotgun, and birdcall.

h. Edible. Meat popular smoked, in broth, with *mole* sauce, and in stew (*huatape*).

j. Tenamon (*Crypturellus cinnamomeus* [?]).

27. *Perico.*

a. piłikito (*sic*).

c. Size of *tortolita* (No. 38); green plumage.

e. Current throughout the year, in *monte;* nests in decayed tree trunks.

f. Tree seeds (*sic*).

g. Shotgun.

h. Edible; meat smoked (presumably preliminary to further preparation). Birds sometimes captured in *monte alto.* Caged; fed mashed banana; and taught to speak. Trained birds sold in Papantla.

j. Parakeet (*Aratinga asteca* [?]).

28. *Pito real.*

a. piʔtółial (*sic*).

b. None.

c. Size of *tordo* (No. 37); long, thick, spoon-shaped bill; black plumage; yellow breast and neck. According to another informant, colors are white, blue, red and black.

d. Rattles (*como matraca*).

e. Appears in the *monte* in September; remains only a month.

f. Insects.

g. Shotgun.

h. Edible, but not well liked; meat smoked preliminary to further preparation. Hunted for its bill, skin, neck, and breast feathers. Not considered medicinal.

j. Toucan (*Ramphastos sulfuratus*).

29. *Pizcuyu* (*sic*).

a. piqʔkuyú.

c. Size of *golondrina* (No. 15); black plumage.

d. piqʔkuyú, piqʔkuyú.

e. Current "everywhere," throughout the year.

f. *Tepehua* ants; large (*garrapatas*) and hard-shelled (*conchudos*) ticks.

g. Not hunted.

h. Placed on riding and pack animals to rid them of parasites.

j. Possibly cowbird (*Molothrus ater*).

30. *Primavera.*

a. paʔtoktok.

c. Size of *cholinche* (No. 6); under plumage yellow and orange; back and wings mottled gray brown.

d. Sings prettily, like the mockingbird (No. 32).

e. Current throughout the year, in *monte bajo* and abandoned milpas; sings only in March and April.

f. Corn, wild chili, and *monte* fruits.

g. h. Not hunted. Sometimes taken from nest to be kept as pet; fed mashed banana and maize dough.

j. Thrush (*Turdus grayi* [?]).

31. *Quebranta huesos.*

a. kiλˀlúkut.

b. Mouth of bone.

c. Size of *cholinche* (No. 6); black plumage; bone-white beak.

d. Cries kwai, in the heat of the day; informant adds that the male sings líˀpun, líˀpun, (*está triste*: "he is sad").

e. Current "everywhere," throughout the year.

f. Corn.

g. Not hunted.

32. *Sinsonte.*

a. pa·mísčin.

c. Size of *primavera* (No. 30); gray and white-striped.

d. Sings sweetly, but only in March, April, and May.

e. Found "everywhere."

g. Not hunted.

i. If caged, will die.

j. Mockingbird (*Mimus polyglottis*).

33. *Tapacamino.*

a. pu·yut, puˀúyut, puswaka.

c. Size of *paloma* (No. 24); white and dark gray plumage.

d. *Caballero* (gentleman) and puˀúyut.

e. Current throughout the year; by day, in *monte;* by night along trails.

g. Not hunted.

i. According to one informant, the *tapacamino* seeks the road when there is a moon, flies and then falls to the ground.

j. Pauraque (*Nyctidromus albicollis*).

34. *Tecolote.*

a. monksˀnóˀ

b. None.

c. Size of small barnyard hen; chocolate-colored plumage.

d. monks? and ai.

e. Current "everywhere," throughout the year; not plentiful.

f. Rabbits, rats, snakes, cats, etc.

g. Shotgun.

h. Not eaten.

i. "When the *tecolote* sings he is foreseeing evil and is crying maledictions." Said to be the devil's "constable" (*topil*); brings news of sickness and death. Because of this, sometimes killed (ftn. 10, p. 76). Witches may send illness via the *tecolote.* In this case, one must find a shaman (*rezandero*), man or woman, to pray and make three offerings, each of four candles, of the wax of the Old World bee; before candles lighted, patient's body stroked with them.

j. Owl (possibly *Ciccaba virgata*).

35. *Tecolotillo.*

a. kúˀlulu.

b. None.

c. Size of index finger; abundant dark gray plumage. Looks like the *tecolote* (No. 34), but smaller.

d. Sometimes, ai; at other times, kuku.

e. Current throughout the year, in *monte.*

f. Unknown to informant.

g. Shotgun.

h. None.

i. Like the *tecolote*, it is the devil's "constable," warning of death and illness. Its cry, ai, frightens people, because it sounds human.

j. Owl (probably pygmy owl, *Glaucidium brasilianum*).

36. *Torcaza.*

a. tučˀtukulut.

b. "*Hay muchos huesos*" (there are many bones).

c. Size of *paloma* (No. 24); dark-brown plumage.

d. tučˀtukulut.

e. Current throughout the year, close to milpas.

f. Corn, wild chili, and pulúš seed (Appendix C, No. 3).

g. Shotgun.

h. Edible; smoked, in broth, and with *mole* sauce.

i. After the Flood, the *torcaza* was the first to be released from the ark. On flying forth and viewing the devastation, he cried in Totonac, "There are many bones"; hence his name.

j. Pigeon, probably red-billed (*Columba flavirostris*).

37. *Tordo.*

a. čaksˀní.

c. Size of *papán* (No. 25); black plumage.

d. Whistles.

e. Current throughout the year; nests in thickets of *palma real* (Appendix C, No. 364). Cornfield pest.

f. Maize.

g. Shotgun.

h. Seldom eaten; not tasty. May be smoked or prepared in broth.

j. Crow (?).

38. *Tortolita.*

a. pukˀnut.

c. Smaller than the *paloma* (No. 24); the male, blue; the female, brown.

d. pukˀpukˀ

e. Current throughout the year, along edges of cornfields.

f. Corn, wild chili, *laurel* seed (Appendix C, No. 130).

g. Traps, shotgun.

h. Eaten, as are doves (No. 24).

i. If it enters the house, a young man will ask to marry the daughter of the family; if there is no daughter, the visit presages illness.

j. One of the small doves (possibly *Claravis pretiosa*).

39. *Totocalca.*

a. tukulala, tukulaˀla.

b. None.

c. Size of *chachalaca* (No. 4); height of a hen, long legs; no tail; brown plumage. According to another informant, a large bird, with yellow bill, black tail, green body, red feet.

d. tu-tu-ku-la-la-la.

e. Current throughout the year, near small streams.

f. Small fish, worms.

g. Traps, shotgun.

h. Edible; "looks like chicken, but fish-flavored." Served smoked, in stew (*huatape*), or with *mole* sauce.

i. Sings only at dawn and dusk; its cry presages rain.

j. Heron or bittern (?).

40. *Vaquero.*

a. tokʔníʔ.

b. None.

c. Size of *zopilote* (No. 41); looks like *aguililla* (No. 1); chocolate-colored plumage.

d. oooook ("like a cattle call"; *como gritan los vaqueros*).

e. Cry heard in *monte.* Bird arrives with the heat, usually in June; departs in August; by September none remains.

f. Poultry.

g. Shotgun.

h. None; bird of prey.

j. Hawk of some kind (?).

41. *Zopilote.*

a. čun.

c. Size of large hen; but greater wingspread. Black plumage.

d. None.

e. Current throughout the year.

f. Eats carrion.

g. Shotgun.

h. Sometimes hunted; medicinal. Broth and meat eaten as cure for rabies; or the fresh blood mixed with "sherry," and drunk.

j. Black vulture (*Coragyps atratus*).

42. *Zopilote rey.*

a. šakλ.

b. None.

c. Slightly larger than the *zopilote* (No. 41); has red head, bill, and feet; brown plumage.

d. None.

e. Current throughout the year; frequents same places as *zopilote.* Not numerous.

f. Devours eyes of dead animals; does not eat putrid meat.

g. Not hunted.

h. None.

i. Considered the king of *zopilotes* (cf. Clavijero 1:90).

j. King vulture (*Sarcoramphus papa*).

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EXPLANATION OF PLATES

Plate 1

Landscape. *a*, View of Tajín, from northwest of main pyramid; note rolling country and dense vegetation. *b*, View along main Papantla-Tajín trail.

Plate 2

Landscape. *a*, View looking northeast from main trail at it passes parcel No. 161 (map 6). *b*, Narrow trail leading to cane and maize fields, vicinity of parcel No. 176. *c*, Main Papantla-Tajín trail. *d*, Wedding party travels west on trail as it passes parcel No. 116 (map 6). *e*, The Arroyo de Ortiga traverses the *fundo legal.*

Plate 3

The *fundo legal* of Tajín. *a*, Approaching the plaza from the east, on Avenida 16 de septiembre. On the right is a plank structure (pl. 9, *f;* map 7, lot 11, house *b*); in the middle background, the old municipal building (map 7, *A*); and behind it, partially visible, a mud-plastered structure (map 7, lot 2, house *b*), now rented as a municipal office. *b–d*, Clearing the plaza through communal labor; *b*, On the right is house *a*, of lot 21, map 7; *c*, In the background is the dwelling which stands on lot 5, map 7. Behind the men on the right is the broad clearing which runs north, to the archeological zone. *d*, In the middle background is the old municipal building (map 7, *A*). *e*, The new masonry school (map 7, *B*) viewed from the southwest. *f*. View across the plaza. On the left is a corner of the school; on the right, a corner of the old municipal building; in the background are *a* and *b* of lot 4, map 7.

Plate 4

Water supply; apiculture. *a*, In the middle ground is an excavation in the bank of the Arroyo de Ortiga, along its course through the *fundo legal.* Water filters into the cavity, from which it is drawn for drinking and general kitchen utility. *b*, *c*, House with hives of native bee hung on east wall; note that one hive is a clay pot; the others, lengths of bamboo. *d*, Pottery hives for native bee sit on a rack against north wall of house. *e*, The Old World bee is kept in commercial wooden boxes. *f*, Pottery hives for native bee rest on a support which raises them a few inches above the ground.

Plate 5

Preparing the milpa. *a*, View after the light undergrowth has been cut with a machete (see pl. 6 for subsequent clearing). *b–d*, Views after the vegetation has been burned, preparatory to planting. *d*, A particularly unsuccessful burn; the field will have to be "swept" (p. 109).

Plate 6

Preparing the milpa. The light undergrowth has been removed, previously (see pl. 5, *a*) and the heavier vegetation now is being cut; note that in *b* an ax is being used.

Plate 7

Maize fields. *a*, *b*, The fields are literally carved out of the forest. *c*, *d*, Young maize plants occur in the same field, cheek by jowl with dry stalks, which still bear unharvested ears. *e*, Milpa, with banana trees. Since this field lies along a trail, a simple fence has been built to protect it from passing stock.

Plate 8

Vanilla pollination; sugarcane processing. *a*, Pollinating the vanilla blossom. *b*, Metal mill for crushing cane. *c*, *d*, Wooden mills for crushing cane. *e*, *f*. "Ovens" for boiling cane juice. In *f*, the "oven" is in operation; note the loop handle of the copper cauldron which has been set in the upper cavity of the "oven."

Plate 9

House types. *a*, *b*, *e*, Native type, thatched roof, walls of upright poles (*a*, *b*) or of poles and bamboo (*e*); *e*, with lean-to addition. *c*, *f*, Houses with tiled roof, plank walls; in the foreground of *c*, at the far right, is a mud-plastered wall. *d*, House with tiled roof, bamboo walls; the non-Totonac equipment visible through the doorway is ours. *a*, parcel No. 133 (map 8); *b*, parcel No. 115 (map 8). *c*, foreground, house *a*, lot 21 (map 7); background, house *b*, lot 11 (map 7). *d*, house *a*, lot 29 (map 7); *e*, parcel No. 89 (map 8). *f*, close-up of house seen in background of *c*; at the right side of *f*, the Avenida 16 de septiembre enters the plaza of the *fundo legal.*

Plate 10

House construction. *a*, *b*, The posts, beams, and basic roof frame have been lashed in place. *c*, A supplementary beam (*carga-zacate*) is hoisted to position, on the outside of the mother beam and resting on top of the butts of the roof poles and scissors (see *f* for subsequent step). *d*, Interior view of the frame. *e*, Withes have been tied on the long sheds of the roof, but their ends extend free. At the tip of the gable, a few have been doubled across the short shed; this operation is continued in plate 11 *a*. *f*, The same supplementary beam shown in *c* is being lashed in place. In this house, roof scissors alternate with simple roof poles; note longitudinal reinforcements and transverse struts of the roof frame.

PLATE 11

House construction. *a*, Tying the roof withes across the short shed. *b*, Interior view of roof thatched with bundles of grass. *c*, Interior view of roof thatched with *palma redonda*. *d*, *f*, Reroofing with *misanteca*. *e*, Interior view of a house with tiled roof, bamboo walls. *g*, Thatching a granary roof with *palma redonda*.

PLATE 12

House views. *a–c*. Doors of split bamboo. *a*, *b*, Exterior views; *c*, interior. *a* lacks the upper finish, which usually consists of a half bamboo, in which the uprights are set; it has the transverse poles on the exterior, whereas *b* and *c* have them on the interior. *c* shows the stone on which the door pivots, as well as the diagonal looping of liana on the interior. *d*, Recently repaired roof of *palma redonda*.

PLATE 13

House views. *a*, Kitchen interior, showing grinding table and 3 metates, the rear foot of each resting in the cavity of an upright bamboo. Note oddments hung from poles which form the wall. At the far right, a large jar rests on inverted pots. Its mouth is covered by a cloth; presumably it contains maize gruel which is being fermented. *b*, Water storage. One clay jar visible within the fenced enclosure; others embedded in the heap of ash visible in the middle ground (*b* of map 9). *c*, Characteristic manner of stacking firewood. *d*, Frame, supported by forked sticks, against outside of kitchen wall. On the right, a pottery "dishpan" sits on a similar forked frame; in the foreground are three inverted pots which function as firedogs when cooking is done outdoors.

PLATE 14

Houses and furnishings. *a*, *d*, Kitchen hearths. *a* rests on a forked post frame and has a raised, U-shaped ridge (*hornilla*) on the upper surface. *b* consists of an enclosure of upright bamboos, built in one corner of the room and filled solidly with earth and stone. At the rear of both photographs, a clay griddle is stood on edge, against the kitchen wall. In *d*, a raceme of bananas is dimly visible, hung above the hearth. *b*, Child sitting on a low chair, with woven palm seat, slat back. *c*, Child sitting on a miniature, one-piece stool, with handle. *e*, Splitting bamboos to make the "springs" for a platform bed. *f*. Child resting on typical bench.

PLATE 15

Domestic altars. *a*, Religious singers chanting in front of the shrine, which has been decorated for the observances which take place the eightieth day following the death of an individual. *b*, An altar not decorated for any special occasion. The images are housed in typical shadow-boxes. On each side of the shrine, motion picture posters are hung on the wall.

PLATE 16

Sweathouses. *a*, *b*, *d*, *f*, Superficial structures. *e*, Subterranean sweathouse. *c*, Interior view of a sweathouse in disrepair. Note the raised floor, stone hearth at rear, water jar, and two half-calabash shells.

PLATE 17

Supplementary domestic structures. *a*, *b*, Poultry houses; *a*, the more characteristic. *c*, *d*, *f*, Granaries; *c*, *f*, separate structures; *d*, inside the kitchen. *e*, Hog shelter.

PLATE 18

Laundry facilities; fences. *a*, Laundry table, with gable-roof shelter. *b*, *c*, Laundry spread to dry; a cropped *chote* tree (Appendix C, No. 10) generally serves in lieu of a clothesline. *d*, Laundry tables; note oval wooden trays. In the center ground a heap of ash obscures view of water jars. *e*, Laundry table, sheltered by triangular thatched roof (map 9, *a*). The water supply is within the fenced enclosure immediately behind the stand on which the oval tray rests. *f*, *g*, Fences; *f*, of rails; *g*, of split bamboo.

PLATE 19

Fiesta cooking. *a*, Girls arrive at the kitchen door, bringing additional supply of water. At lower right, two large clay pots rest on firedogs. At the extreme left, a basin sits in the crotch of a forked stick; it contains water for washing the hands. *b*, Outdoor "kitchen"; note the inverted pots which function as firedogs.

PLATE 20

Fiesta cooking. *a*, Chocolate is beaten with a home-made apparatus (fig. 29, *a*). *b–d*, General views; note the inverted pots which function as firedogs and the profusion of pottery vessels scattered on the ground (*b*, *d*).

PLATE 21

Wooden trays; calabash shells. *a*, *a'*, *b*, *b'*, Wooden trays, presumably of local manufacture. *a*, *a'*, red background, with polychrome overpaint; light wash of cream on interior wall. Painter unknown; rim diameter, 50 cm. *b*, *b'*, orange background, with polychrome overpaint; painted by Luciano Cano, Papantla; rim diameter, 45.5 cm. *c*, *d*, Decorated calabash shells. *c*, allover coating of cheap, red, oil paint; exterior design in polychrome. Painted by Luciano Cano, Papantla; rim diameter, ca. 17 cm. *d*, red lacquer, with polychrome motifs on interior and exterior. Purchased in Papantla market; vendor declared specimen to be "from the state of Puebla" (*sic*); rim diameter, ca. 17.5 cm.

PLATE 22

Wooden masks; baskets; hanging frame. *a*, *c*, *e*, Masks. *a*, Model mask for clown (*pilatos*) (*sic*) "of any dance group." Made by Donato Santes, Tajín, height, 29 cm. *c*, Mask for chief dancer of Negritos; used by dance group in Gildardo Muñoz. Maker unknown; height, 16.5 cm. *e*, Mask for clown of Negritos; used by dance group in Gildardo Muñoz. Maker unknown; height, 17.5 cm. *b*, *f*, Baskets. *b*, Wicker basket, made by Pascual Santes, Tajín; diameter, ca, 37 cm. *f*, Wicker basket strainer, made by Modesto González, Tajín; diameter, 20–22 cm. *d*, Hanging frame for food storage; made by Guadalupe de Luna, of San Miguel Pericos; diameter, 46–48 cm.

PLATE 23

Wooden puppet (*a–c*) used in course of Christmas festivities. Maker unknown; height, 72 cm.

PLATE 24

Pottery making. Various steps in making a jar. *a*, The clay is worked between the hands to form a roll. *b*, The roll is placed in a half circle, on a banana leaf, which is spread on top of a box; the original half circle has been completed by a second roll, and a third half circle placed on top. *c*, There is a total of three circles (each composed of two rolls of clay), one on top of the other. *d*, Coils have been obliterated through upward stroking, and the cylinder now stands about 35 cm. tall. *e*, With a corncob, the upper walls of the cylinder are stroked upward, to form the rim of the jar. *f*, The walls are scraped and smoothed. *g*, The belly of the vessel is expanded. *h*, In the right foreground, a jar has dried sufficiently to be stood on its rim, and the moist clay of the base stroked to close the aperture. This operation has not yet been completed. On the floor are scattered castor leaves, which have been wrapped about the base, to keep the clay damp, while the remainder of the vessel dried.

PLATE 25

Pottery making. *a–d*, Bowls. *e–g*, Baking plate. *a*, Two clay circles are superimposed. *b*, The coils are obliterated on the interior. *c*, The upper edge is wiped with the moistened hand to form the rim of the vessel. *d*, The base has been added and the surface of the bowl is being smoothed with the hand, which has been dipped in water. *e*, The baking plate usually is formed on the base of an inverted wooden tray. *f*, In this case, the griddle is made on a flat board; the upper surface of the plate is being smoothed with the hand. *g*, A griddle is being fired; note the radial disposition of the fuel. Ash has been placed on the upper surface of the plate, to prevent breakage.

PLATE 26

Braiding; palm ornaments. *a*, Making a seven-strand braid of *jonote* bark. *b*, Palm stars used in cemetery decoration; the grave is strewn with clay incense burners. *c–e*, Palm stars used as altar ornament. *f*, Canopy made of four leaves of *palma real;* the segments of the lower half of each leaf have been woven to form a selvage. Woven palm stars are affixed as ornament (cf. pl. 27, *d*).

PLATE 27

Woven palm ornaments. *a*, *b*, Stars. *c*, Star variant. *d*, Star affixed with wooden skewer to palm canopy; cf. pl. 26, *f*. *e*, Pineapple. *f*, Sun or sacrament. *g*, Basket or gourd.

PLATE 28

Spinning and weaving. *a*, *c*, Spinning. *b*, *f*, Winding the spun thread on the spindle. *d*, Wrapping the heddle; ordinarily, one works from left to right, not as shown in the photograph. *e*, Changing the shed. *g*, Warping over three stakes (cf. fig. 55).

PLATE 29

Cotton textiles. All are "old" *manteles;* measurements given below are approximate and do not include fringe. *a*, No. 18; 35 × 40 cm. *b*, No. 16; 58 × 63 cm. *c*, No. 23; 76 × 90 cm. *d*, No. 24; 68 × 69 cm.

PLATE 30

Cotton textiles. Warp threads run lengthwise on the page. *a–g*, to same scale, to demonstrate differences in texture between various products and between "old" and new *manteles*, *a*, Modern strainer (*coladera*), No. 3; approximately 7 warps to each centimeter. *b*, *Ruedo*, No. 8. *c–e*, "Old" *manteles; c*, No. 16; *d*, No. 20; *e*, No. 19. *f*, *g*, New *manteles; f*, No. 31; *g*, No. 34. *h*. *Ruedo*, No. 8. Two lengths of warp threads, left unwoven above the fringe, are sewn to the fabric to prevent raveling.

PLATE 31

Cotton textiles: fringe. All illustrated specimens are *manteles*. *a*, No. 16; *b*, No. 34; *c*, No. 19; *d*, No. 23; *e*, *f*, No. 18. Knots (p. 235; fig. 62) are as follows: *a*, knot *a; b*, knots *b* and *g; c*, knot *c; d*, knot *d; e*, *f*, knot *g*. Knots *e* and *f* not shown here but appear in figure 62.

PLATE 32

Embroidered skirt; woven belt. *a–d*. Sacklike skirt, embroidered in blue; the type current forty-odd years ago. Made by Luz Valencia, Tajín, who loaned the specimen for photographing. Both sides of the skirt are shown, as well as detail of the embroidery. *e*, *f*. Obverse and reverse of red and white woven sash, purchased in former times from traders from the highlands; precise provenience unknown to informants. No longer available, but a few such belts still are found in Tajín and are worn exclusively by elderly women (pl. 20, *a*).

PLATE 33

Embroidery. *a*, *b*. Border at each end of *ruedo* No. 10. *c–e*, Blouse embroidery; *c*, design darned on a drawnwork foundation. *f*, Candlewick work.

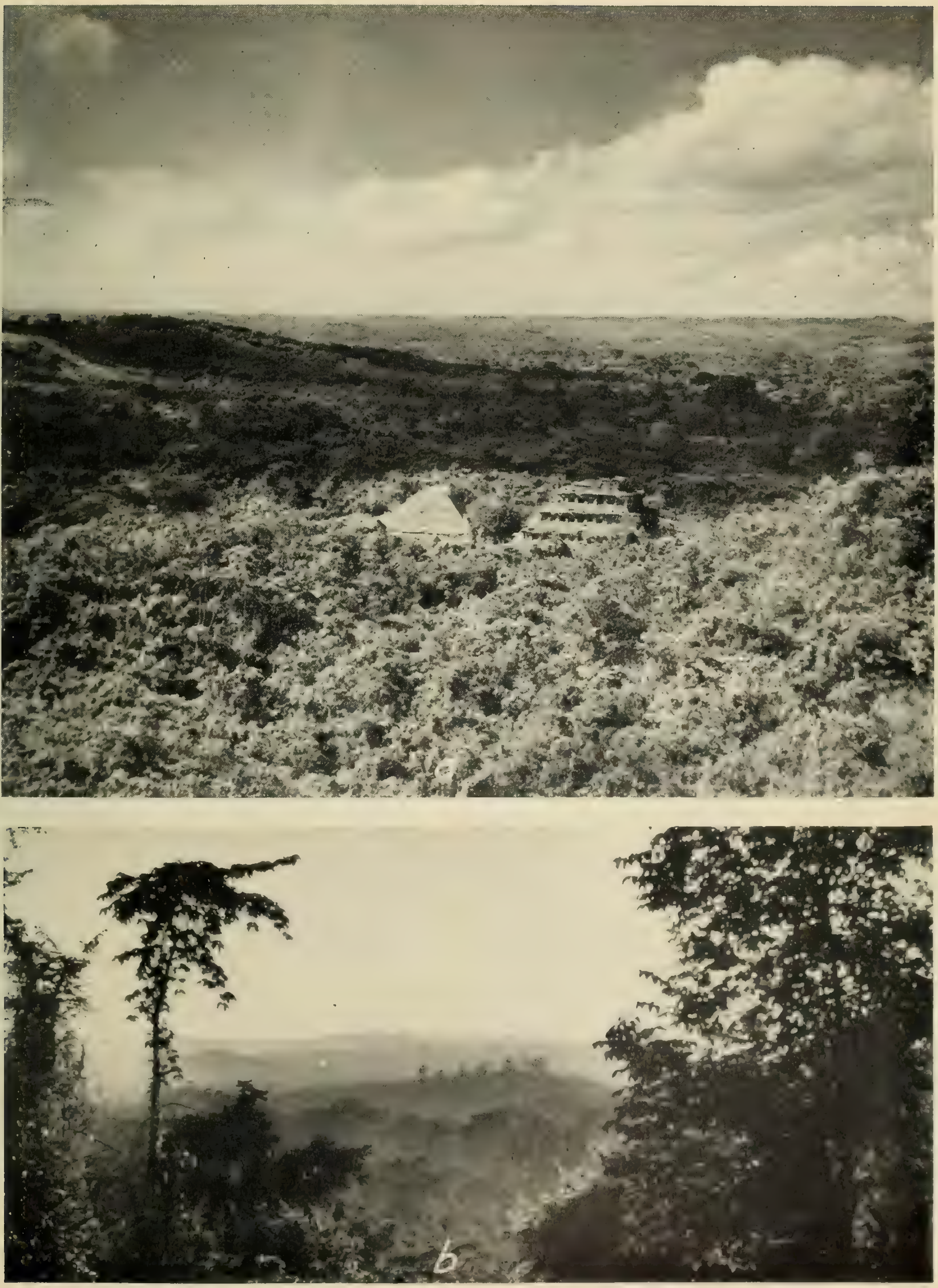


Plate 1.—**Landscape.**

(For explanation, see p. 362.)

PLATE 2.—**Landscape.**

(For explanation, see p. 362.)

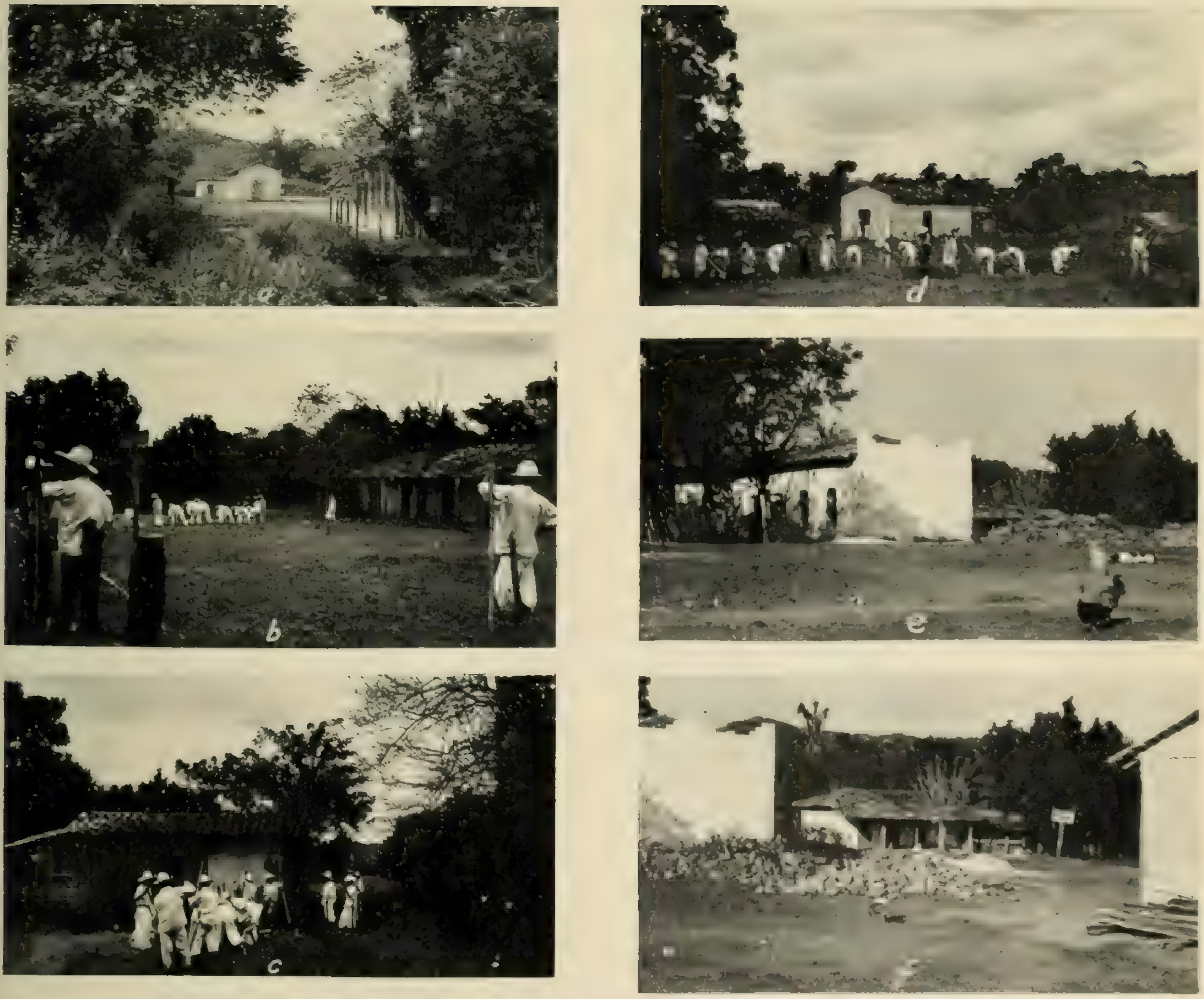


Plate 3.—**The *fundo legal* of Tajín.**

(For explanation, see p. 362.)

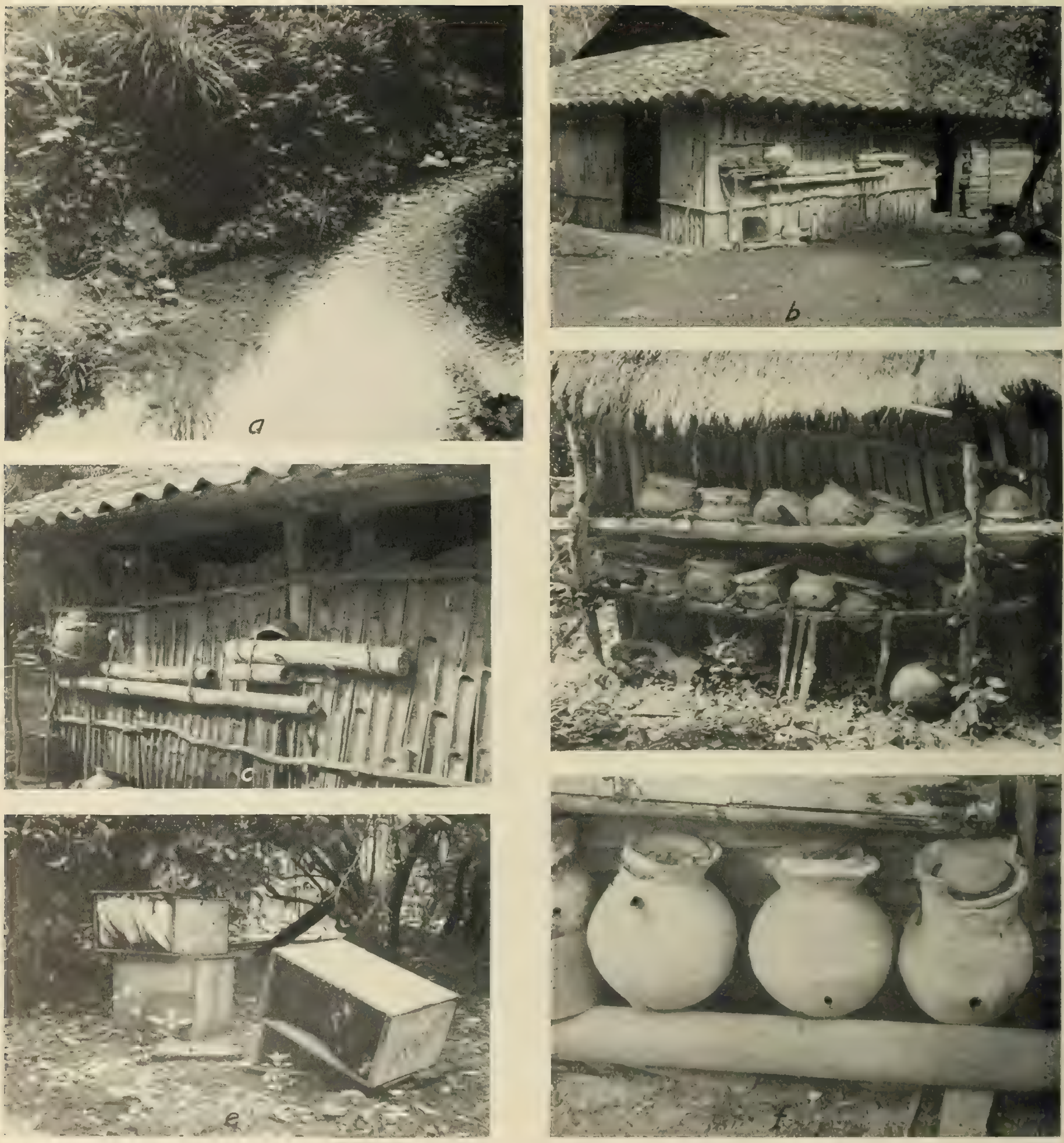


PLATE 4.—**Water supply; apiculture.**

(For explanation, see p. 362.)

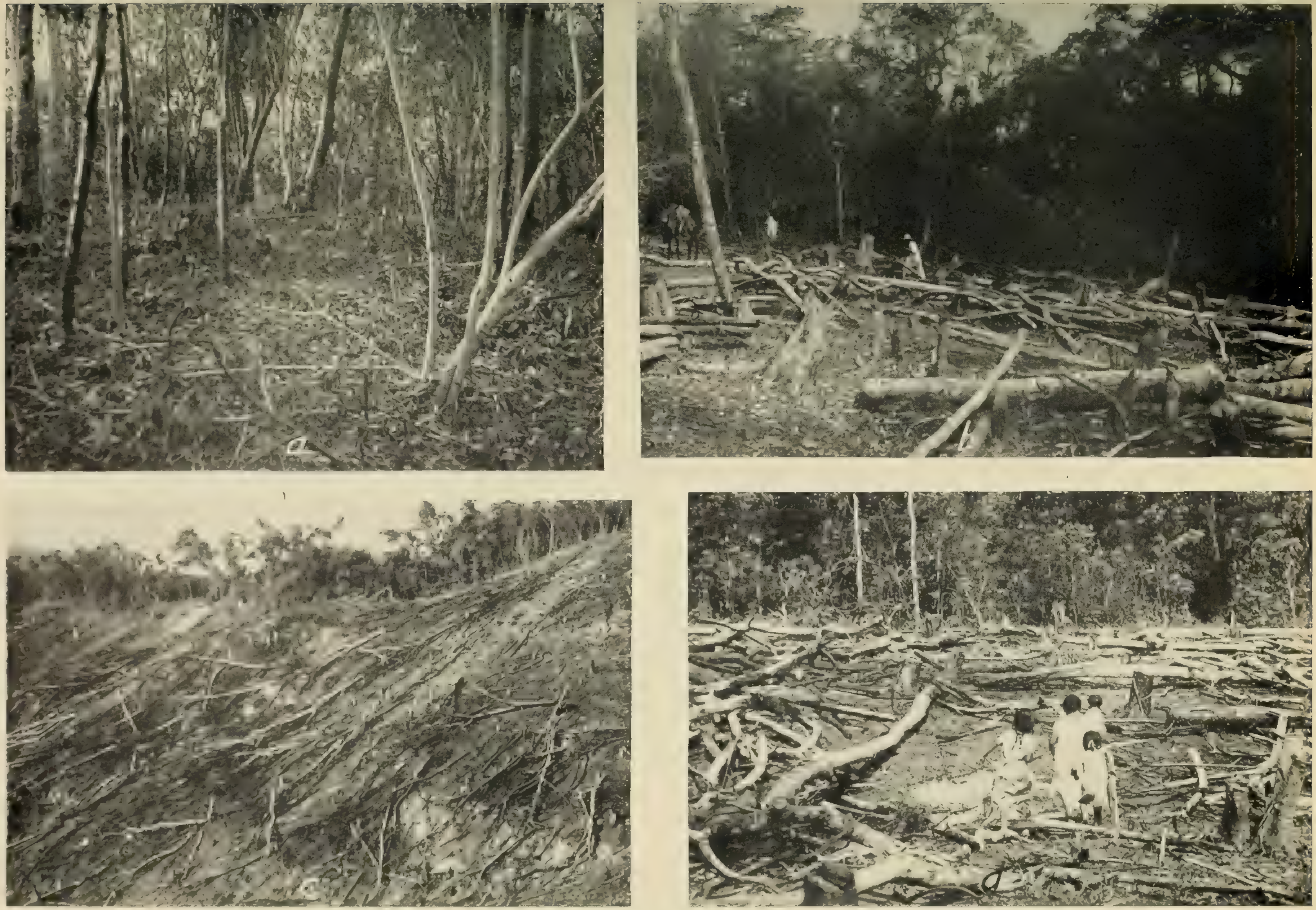


PLATE 5.—**Preparing the milpa.**

(For explanation, see p. 362.)

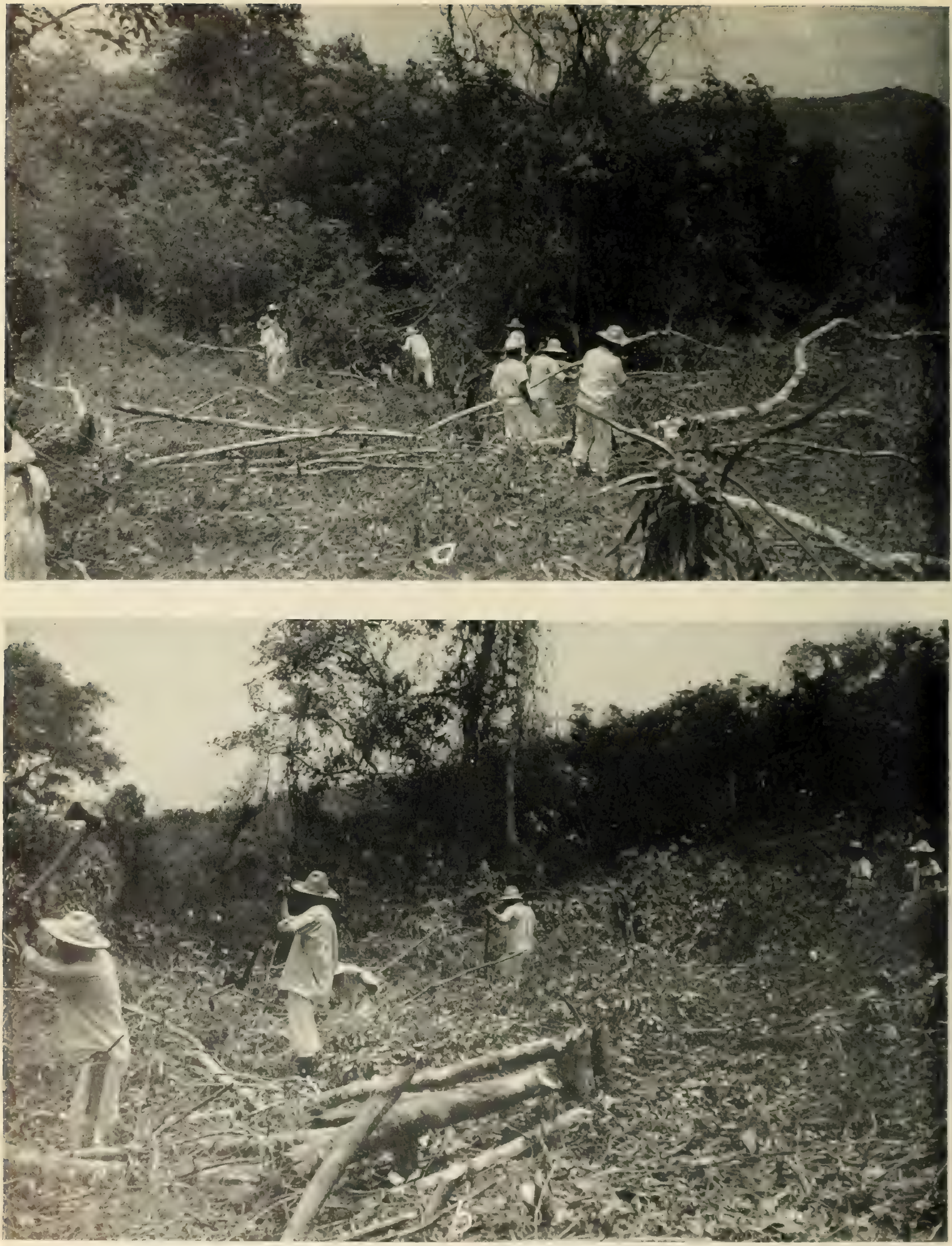


PLATE 6.—**Preparing the milpa.**

(For explanation, see p. 362.)

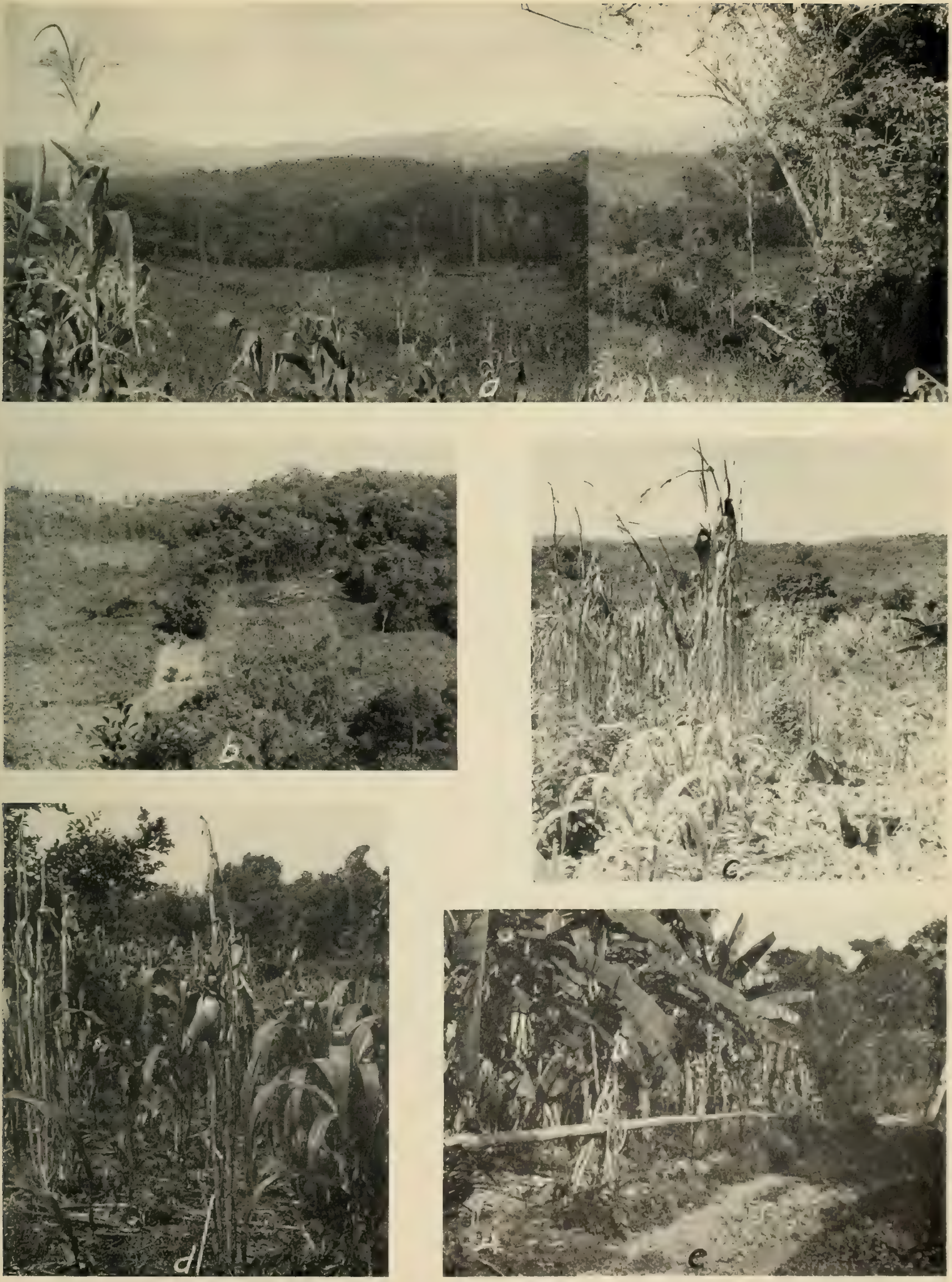


PLATE 7.—**Maize fields.**

(For explanation, see p. 362.)

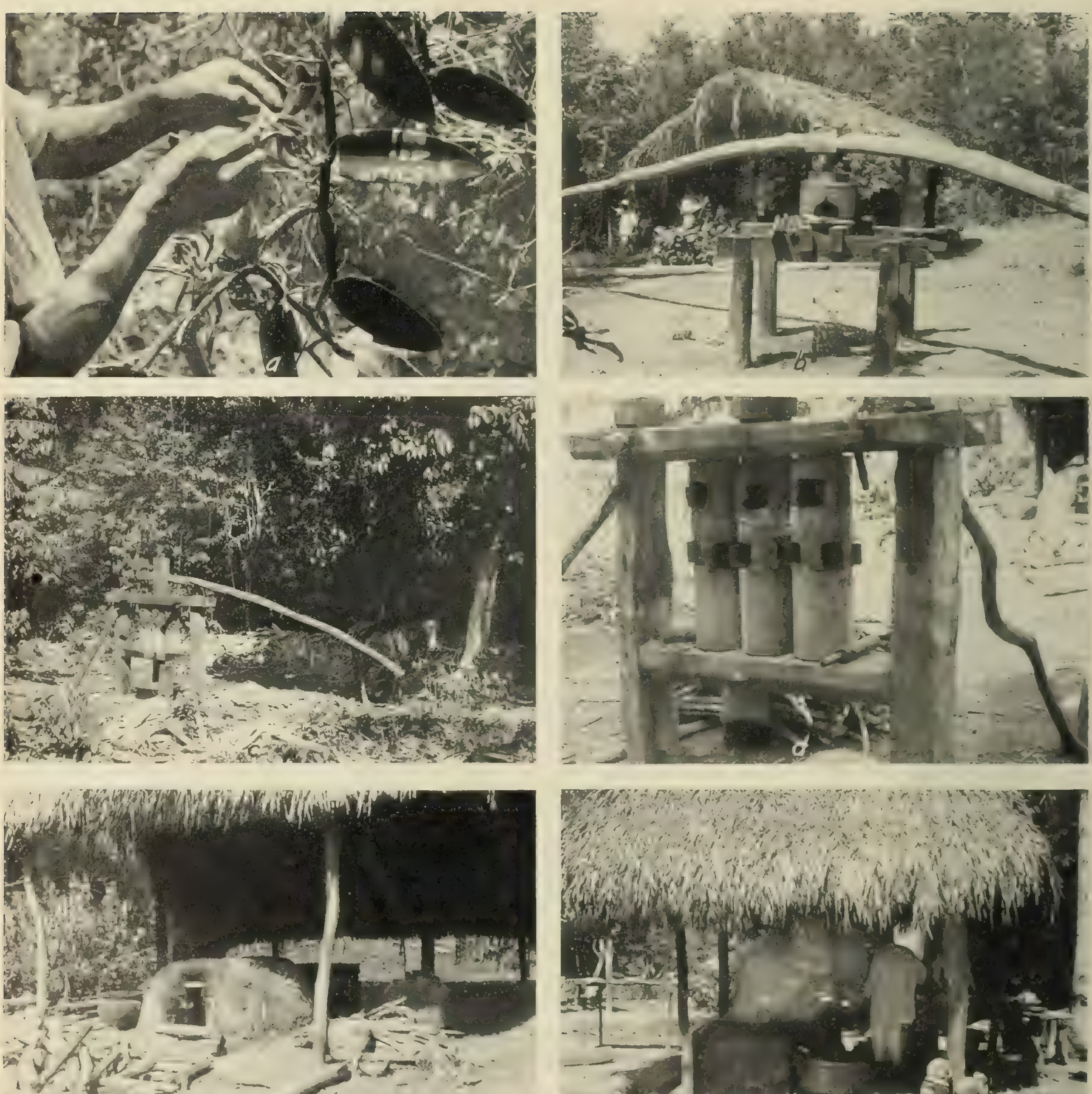


Plate 8.—**Vanilla pollination; sugarcane processing.**

(For explanation, see p. 362.)

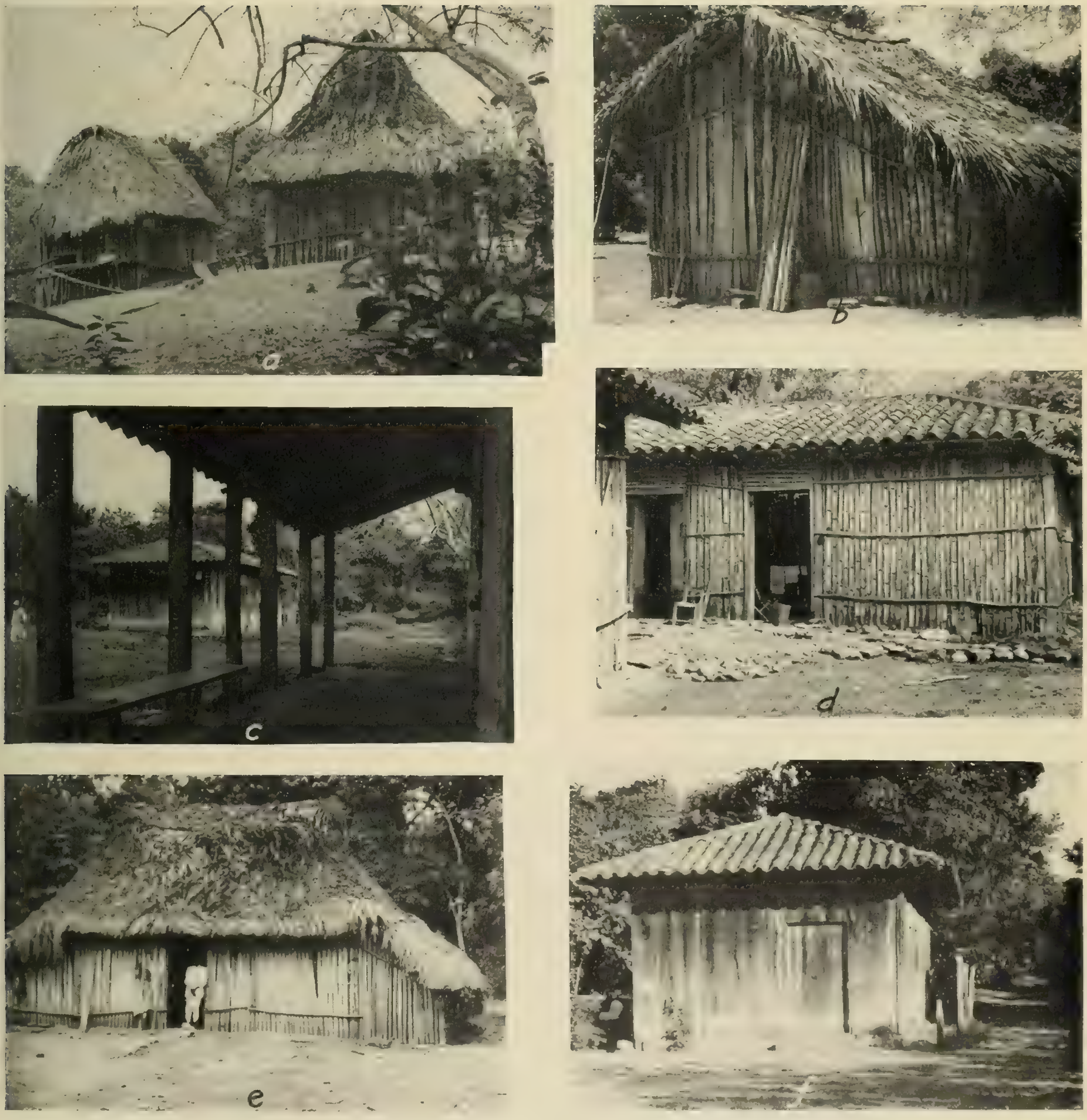


Plate 9.—**House types.**

(For explanation, see p. 362.)

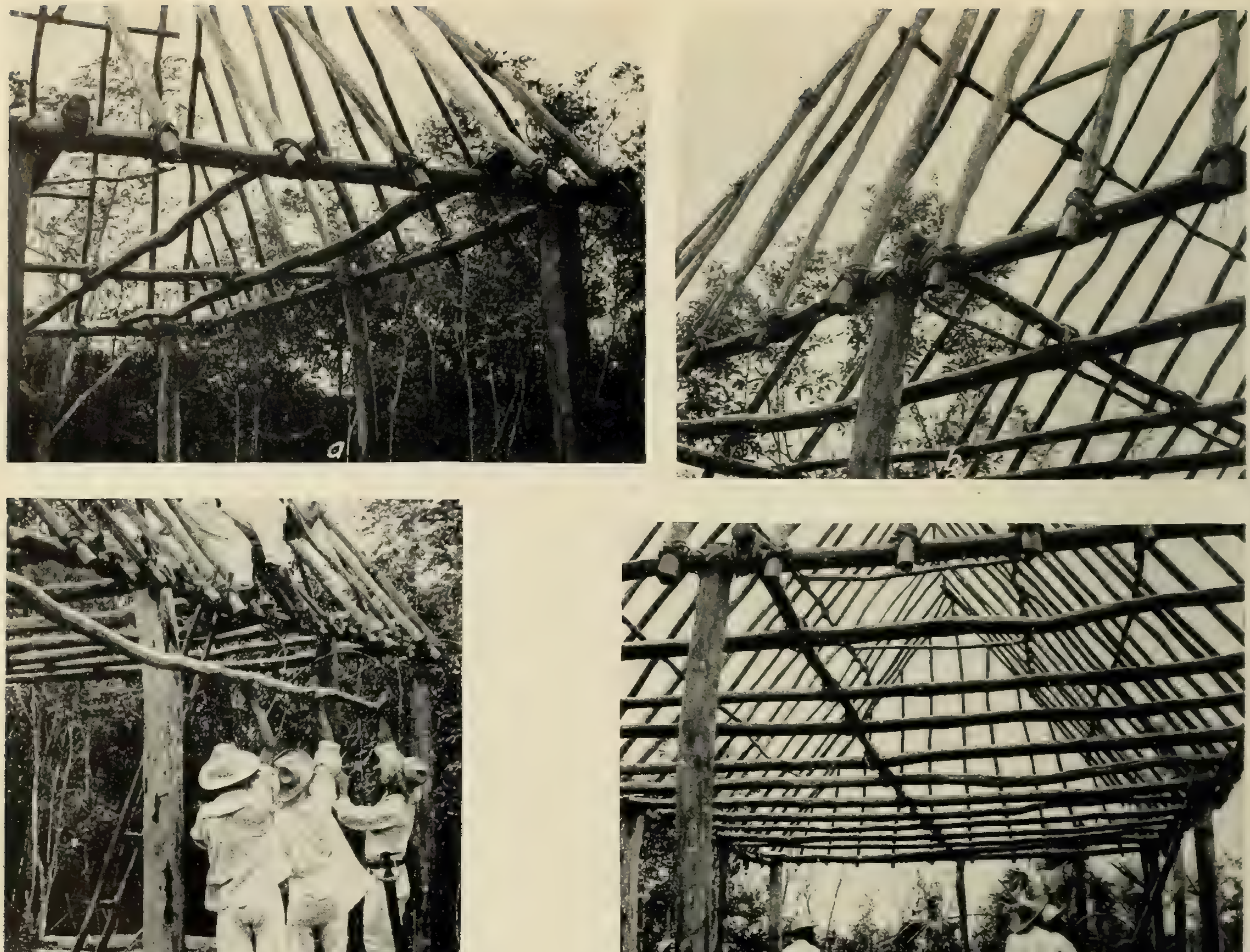


PLATE 10.—**House construction.**

(For explanation, see p. 362.)

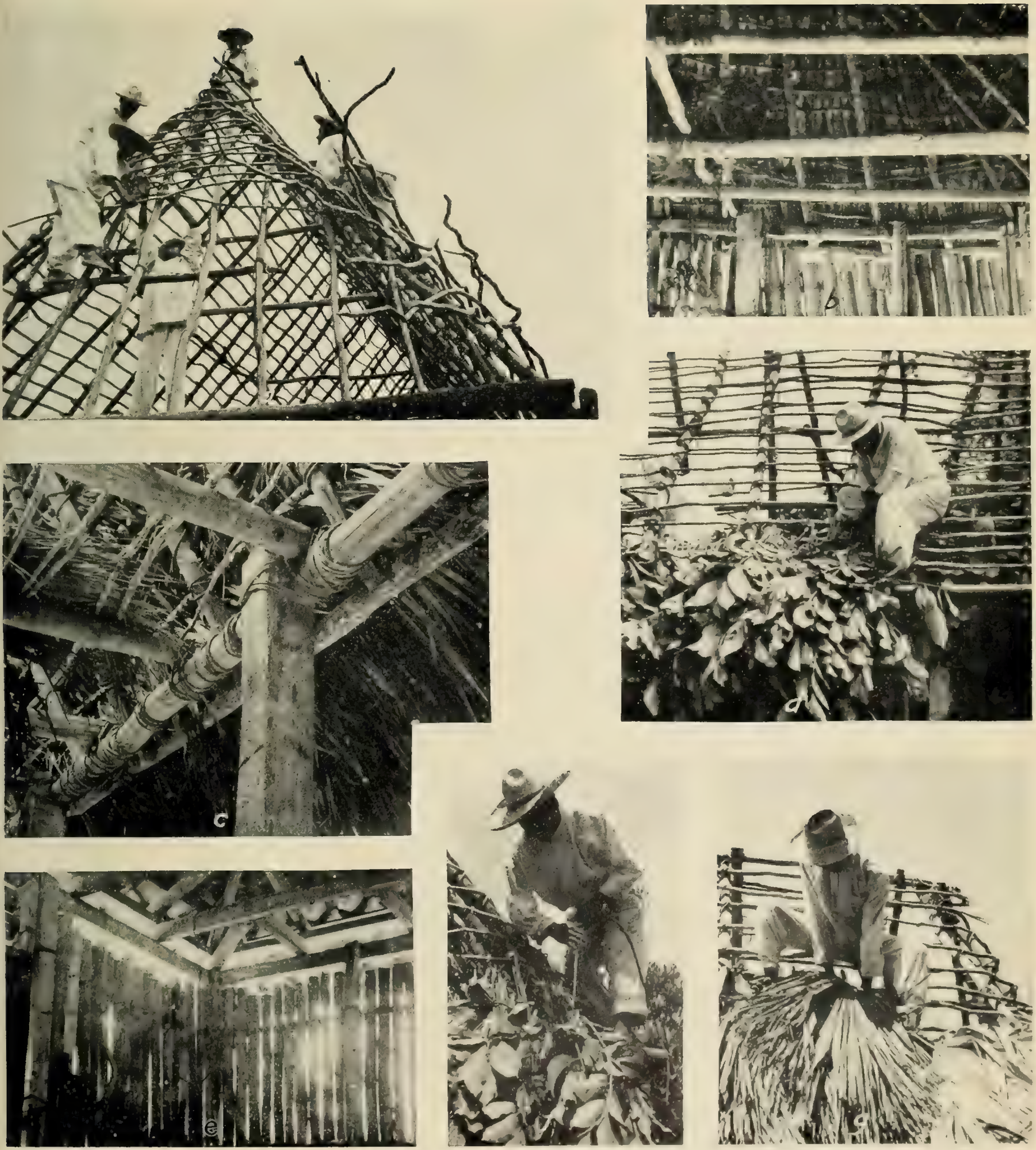


PLATE 11.—**House construction.**

(For explanation, see p. 363.)

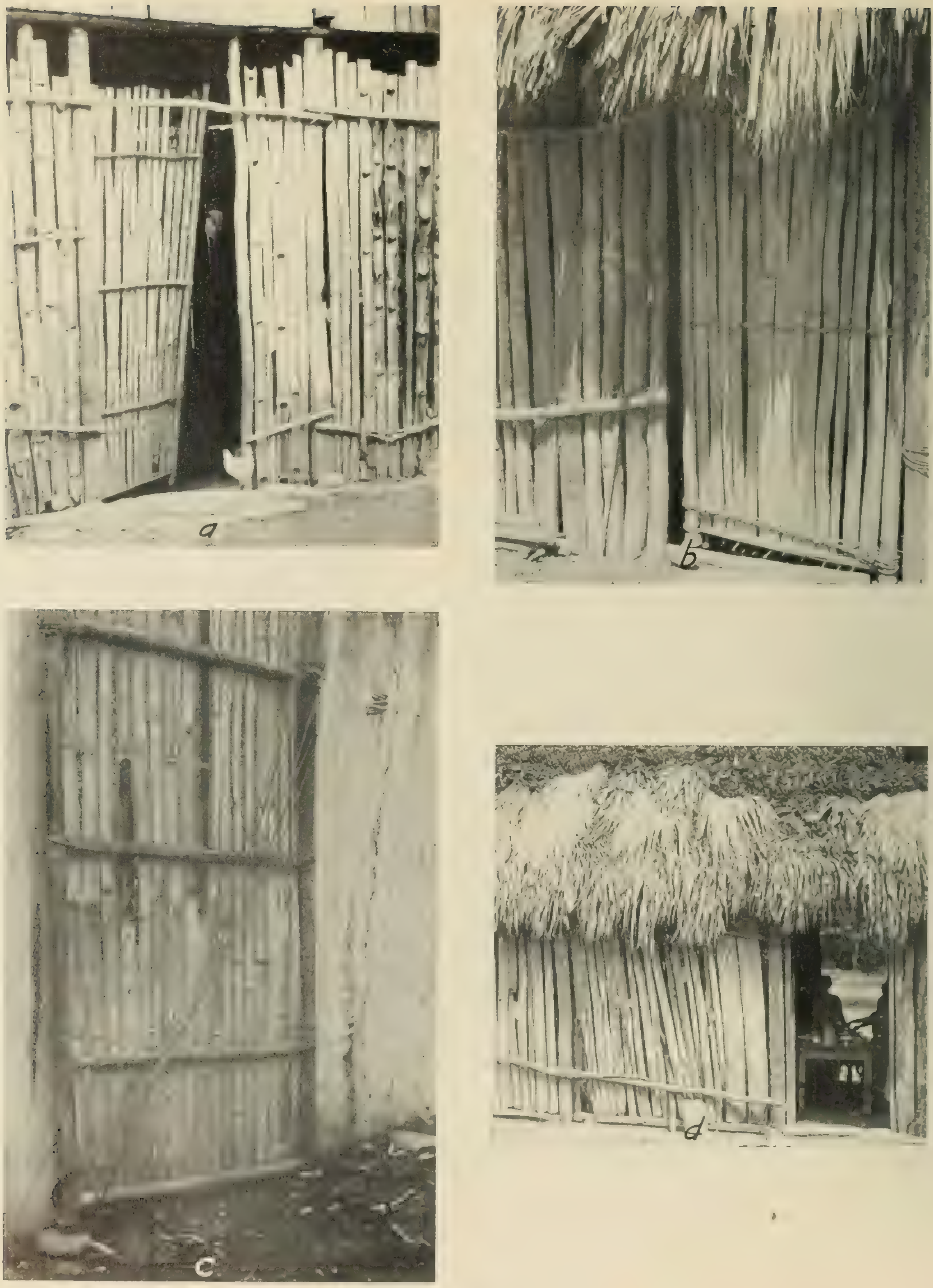


PLATE 12.—**House views.**

(For explanation, see p. 363.)

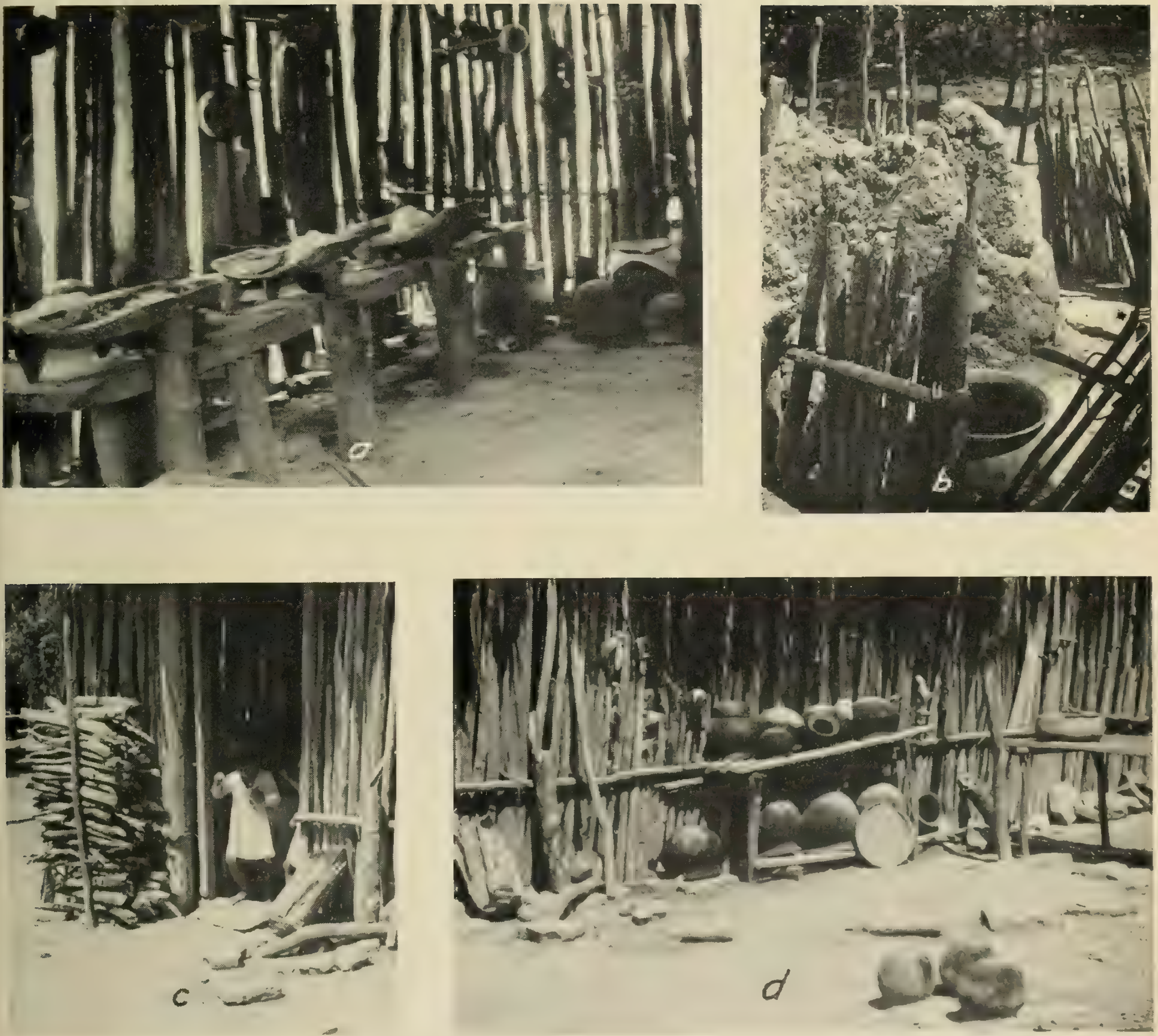


PLATE 13.—**House views.**

(For explanation, see p. 363.)

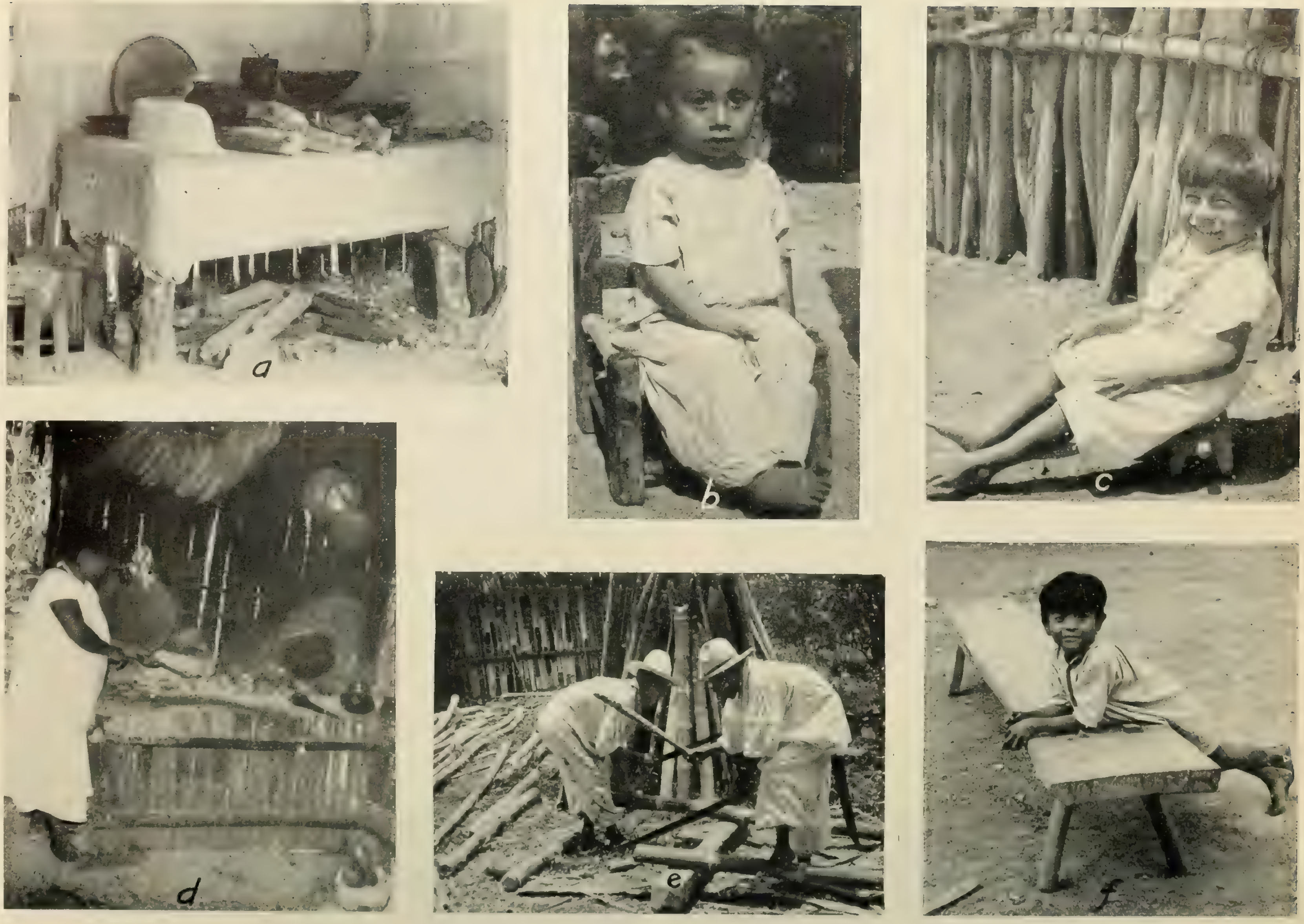
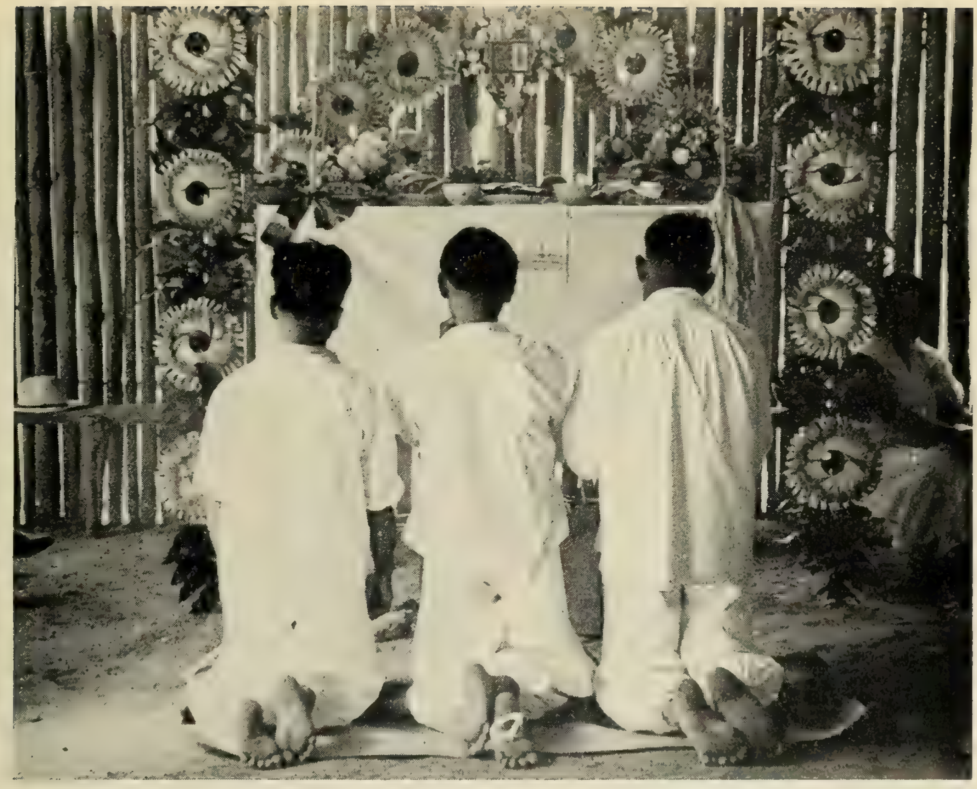


PLATE 14.—**Houses and furnishings.**

(For explanation, see p. 363.)



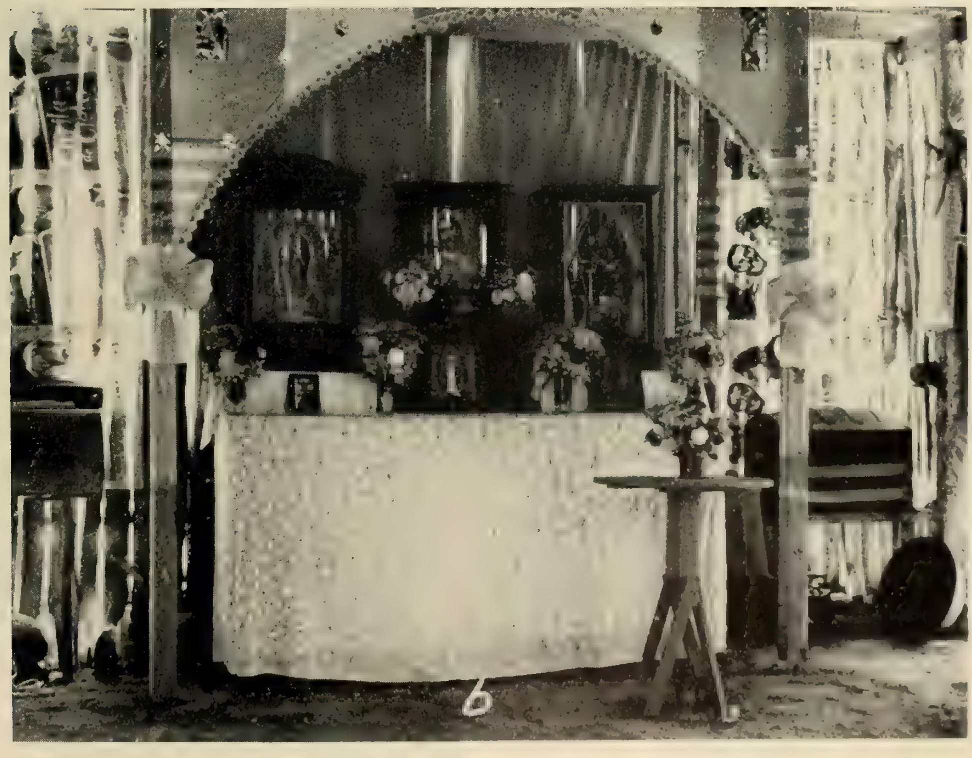


PLATE 15.—**Domestic altars.**

(For explanation, see p. 363.)

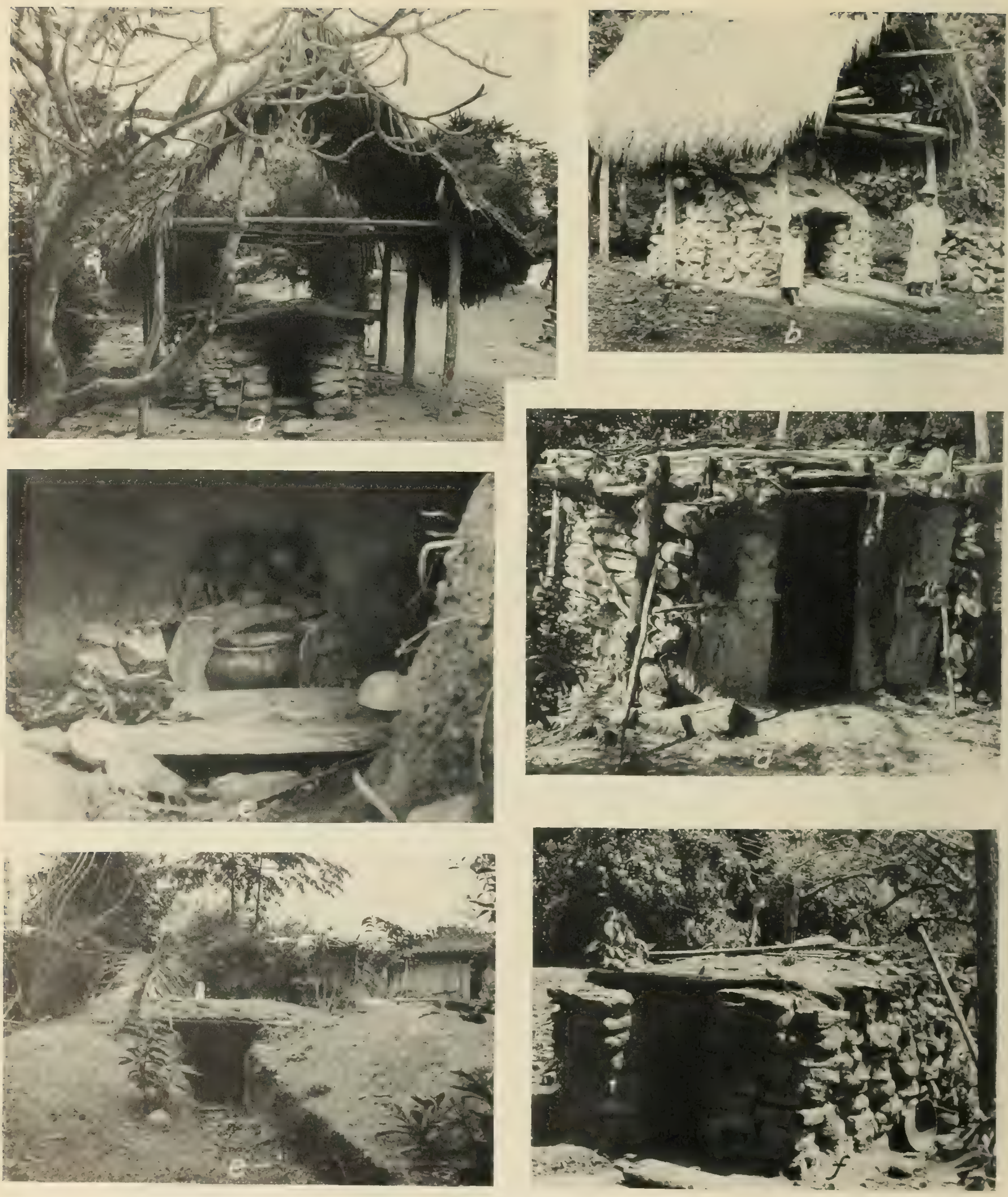


Plate 16.—**Sweathouses.**

(For explanation, see p. 363.)

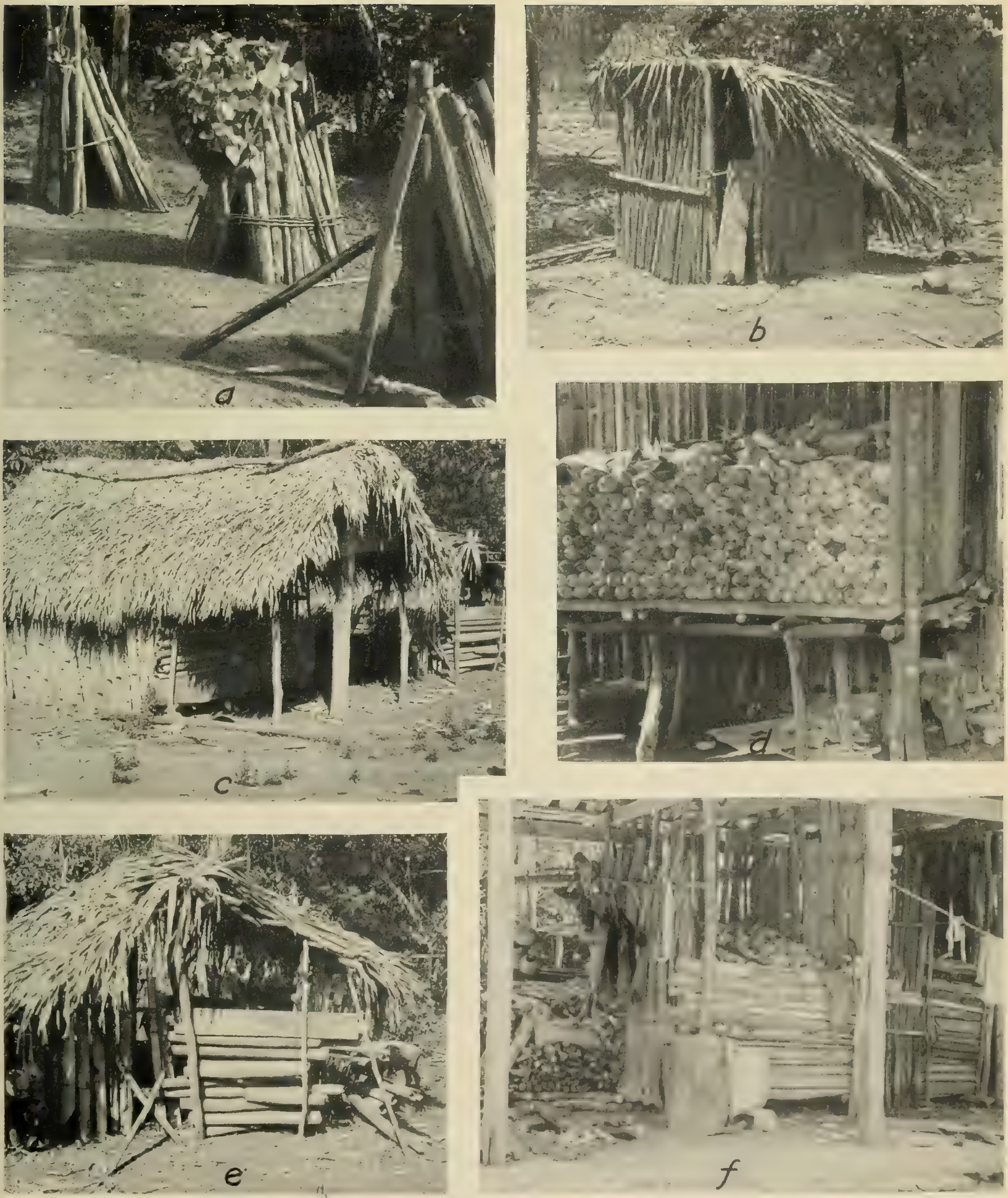


PLATE 17.—**Supplementary domestic structures.**

(For explanation, see p. 363.)

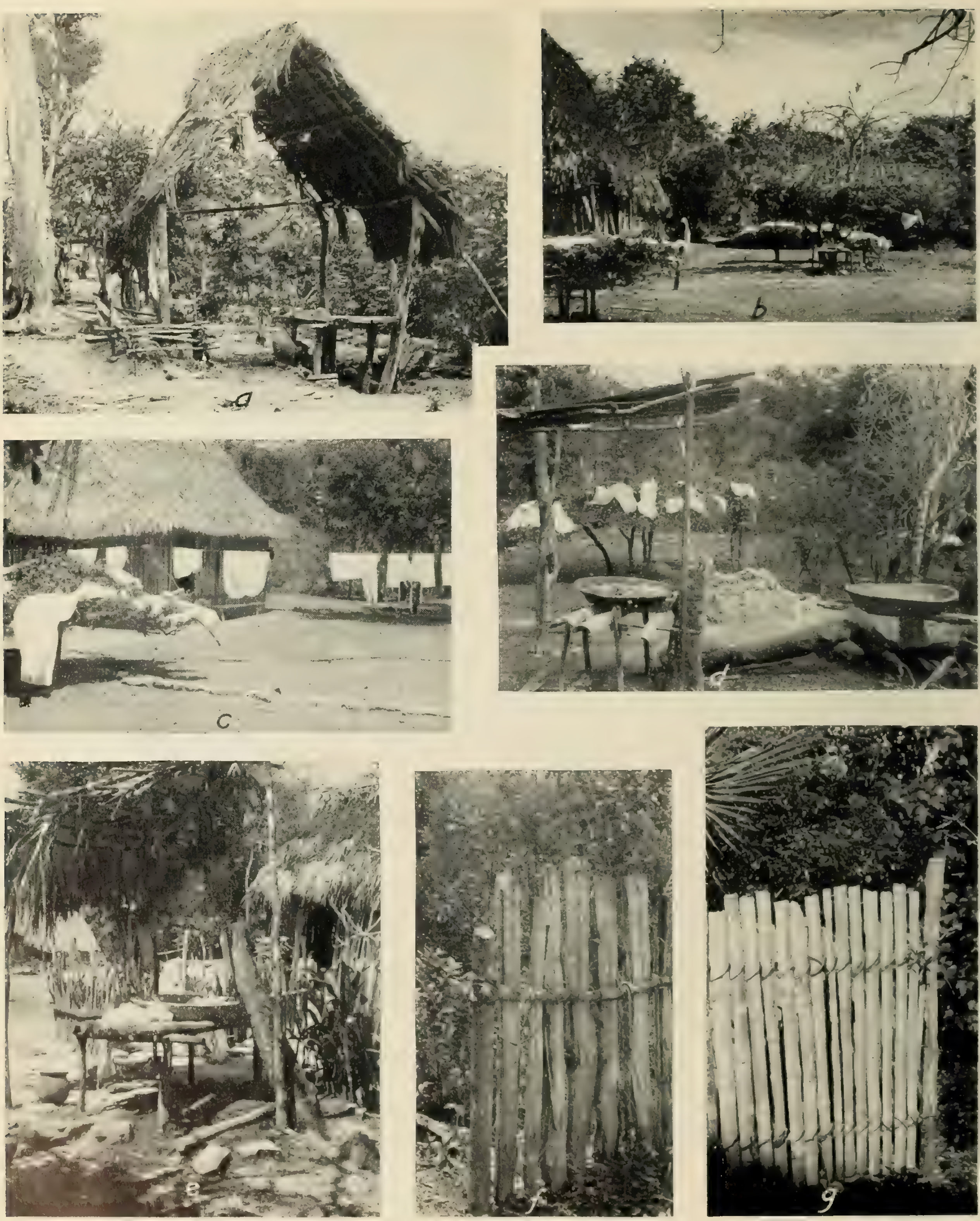


Plate 18.—**Laundry facilities; fences.**

(For explanation, see p. 363.)

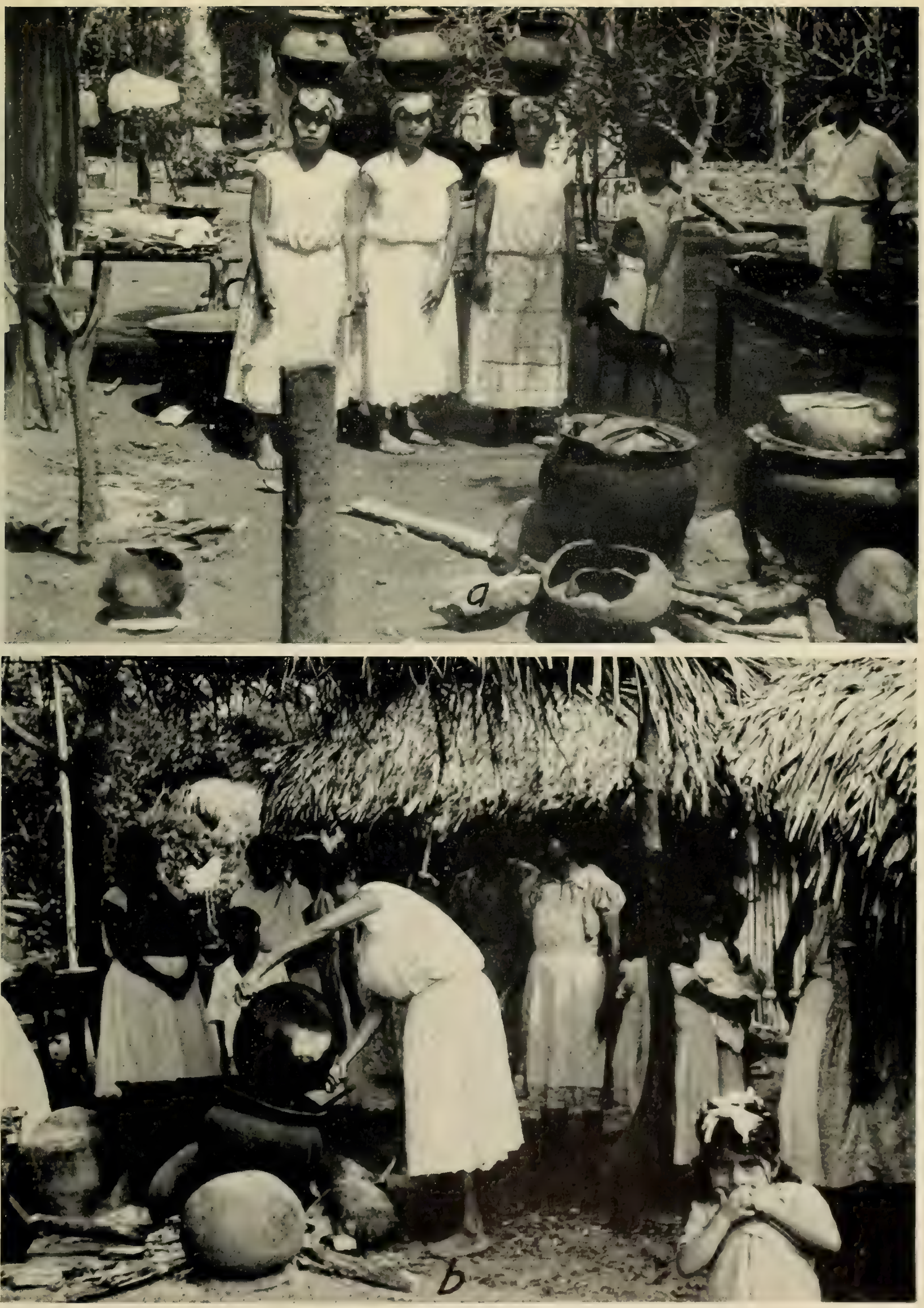


PLATE 19.—**Fiesta cooking.**

(For explanation, see p. 363.)

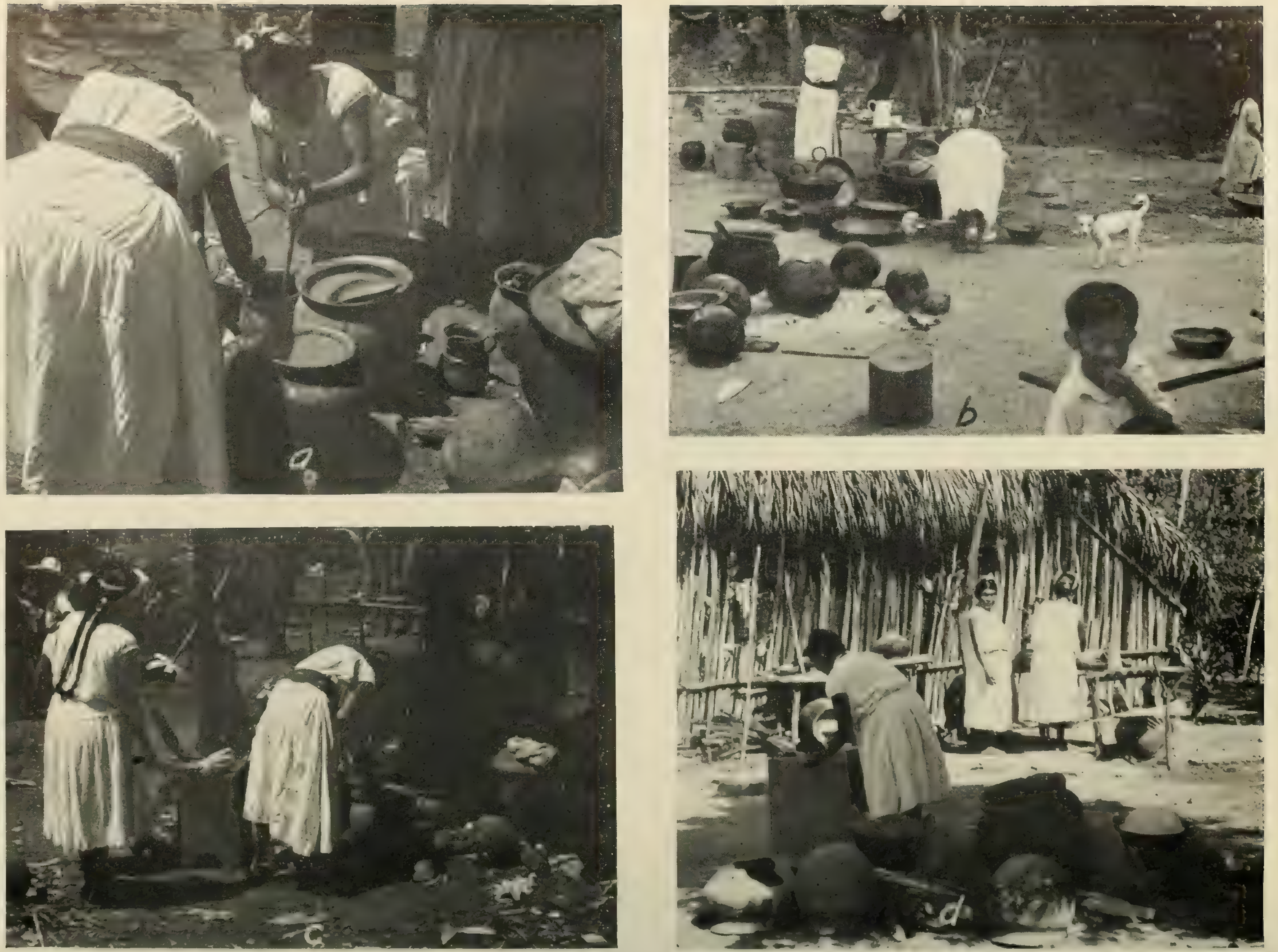


PLATE 20.—**Fiesta cooking.**

(For explanation, see p. 363.)

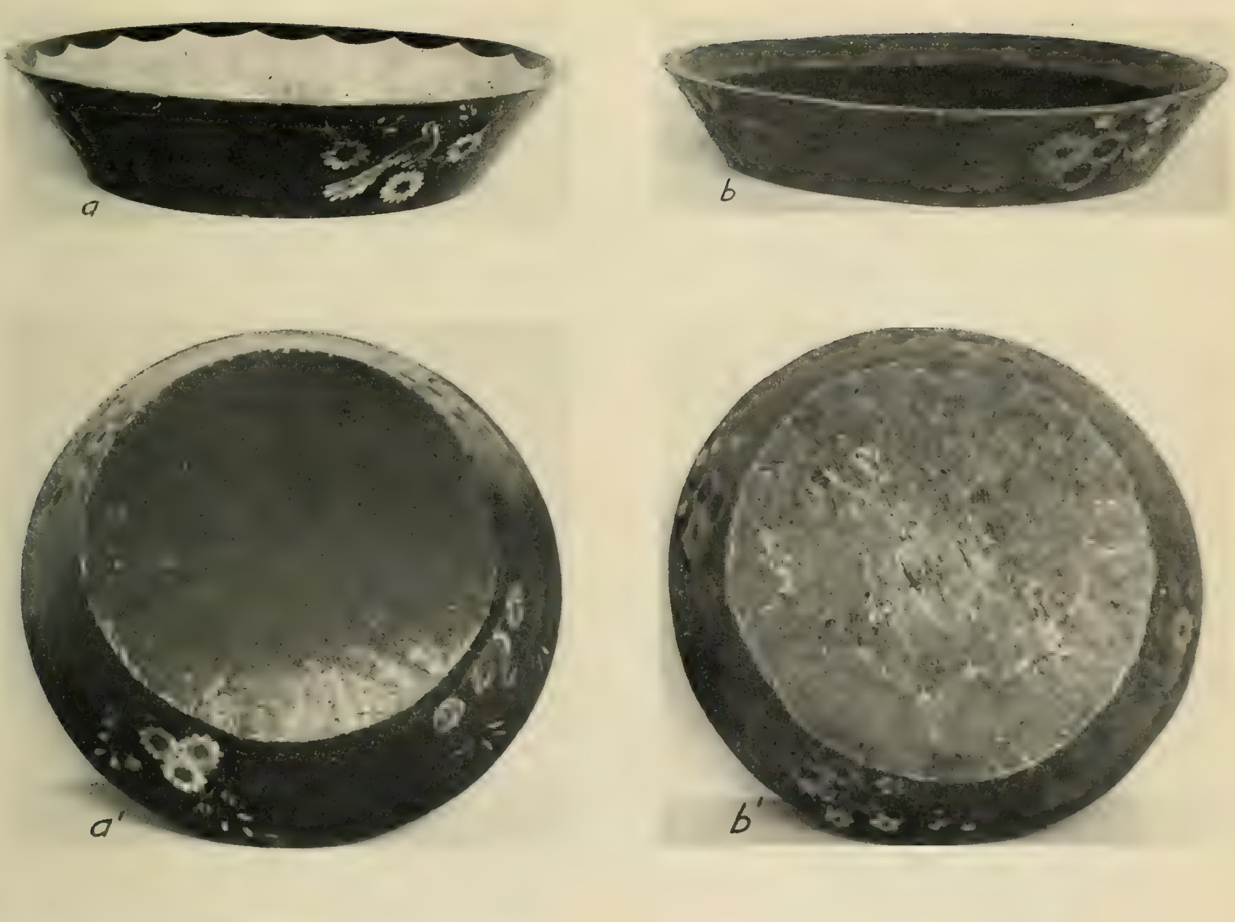


PLATE 21.—**Wooden trays; calabash shells.**

(For explanation, see p. 363.)

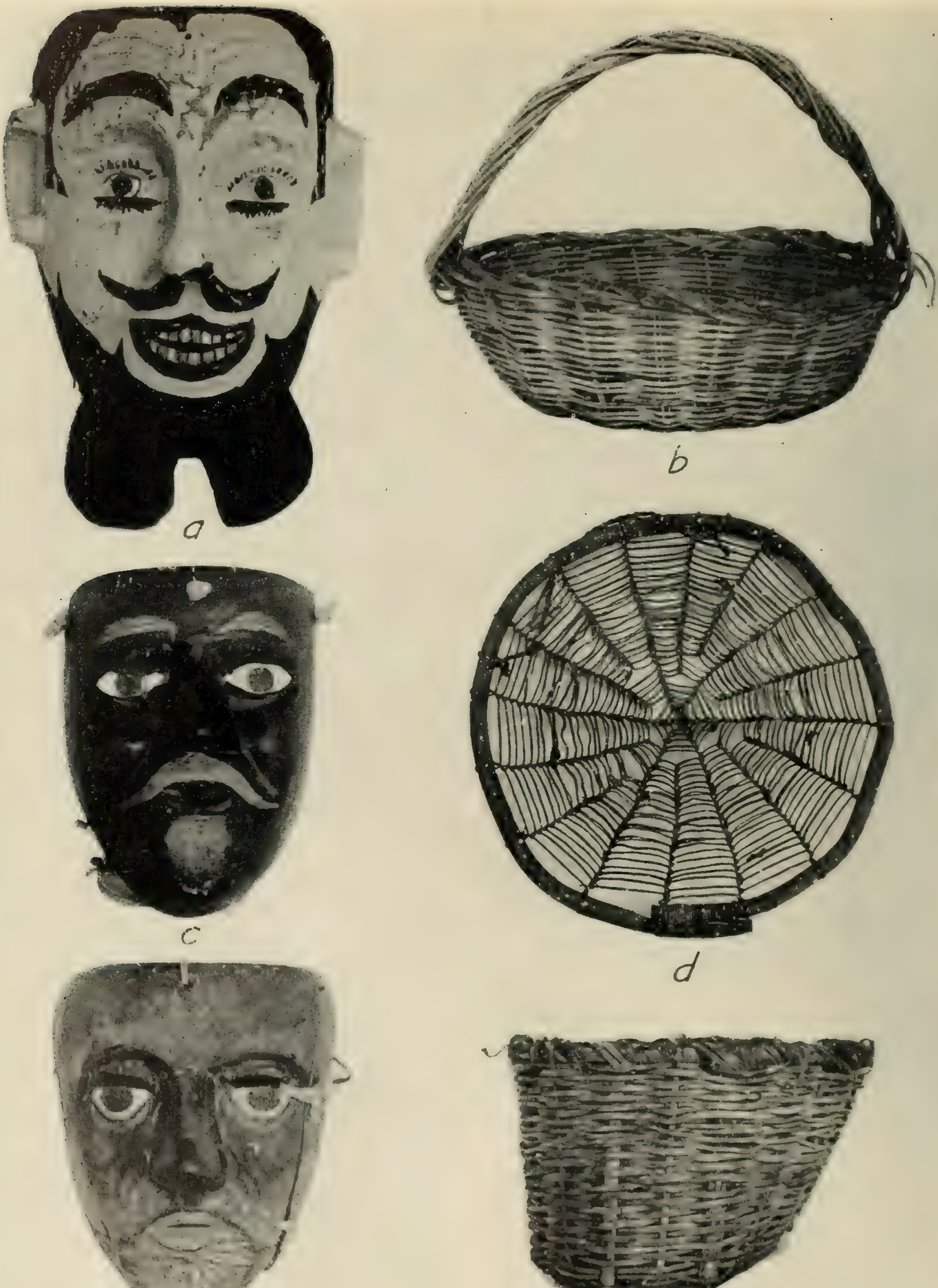


PLATE 22.—**Wooden masks; baskets; hanging frame.**

(For explanation, see pp. 363–364.)

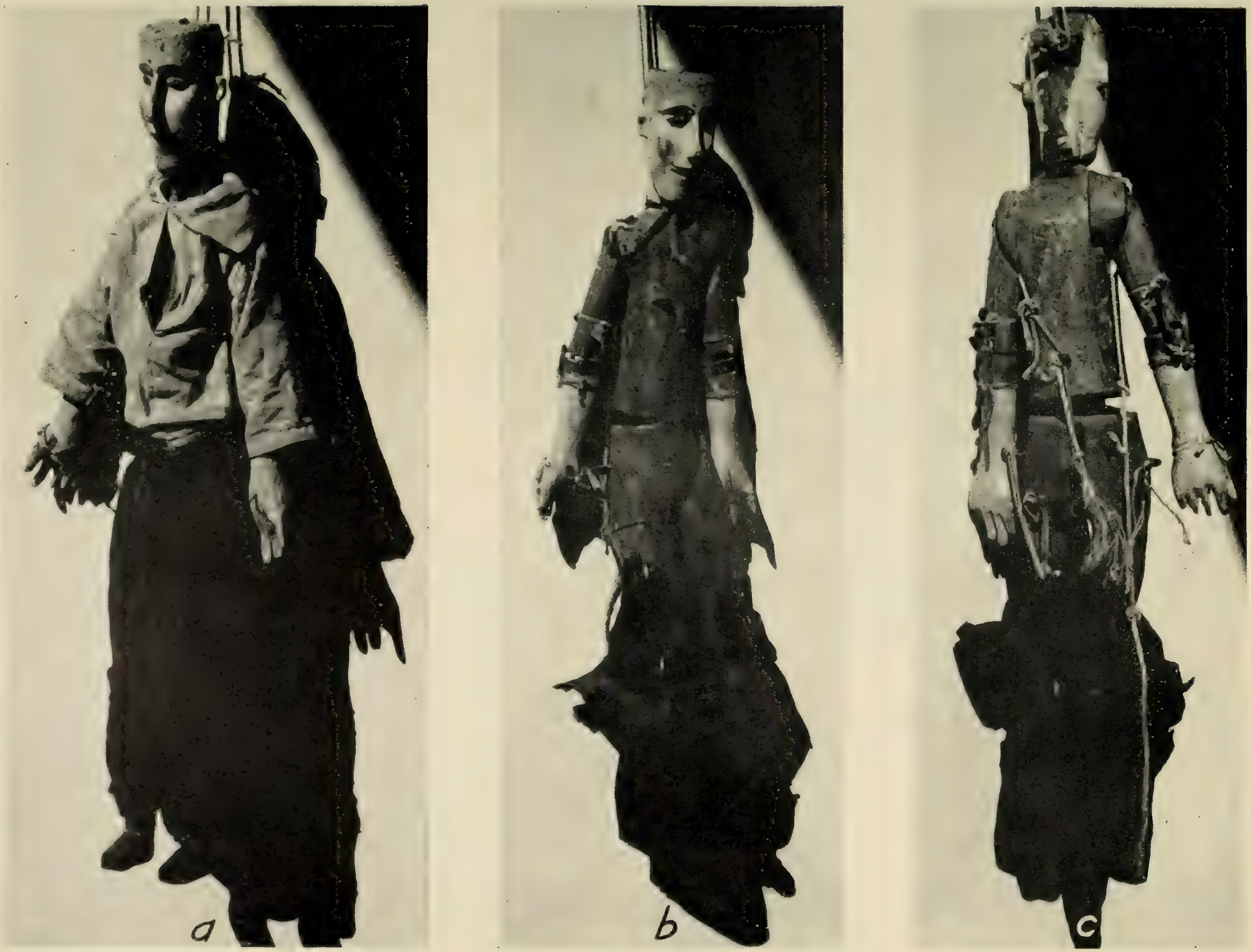


PLATE 23.—Wooden puppet.

(For explanation, see p. 364.)

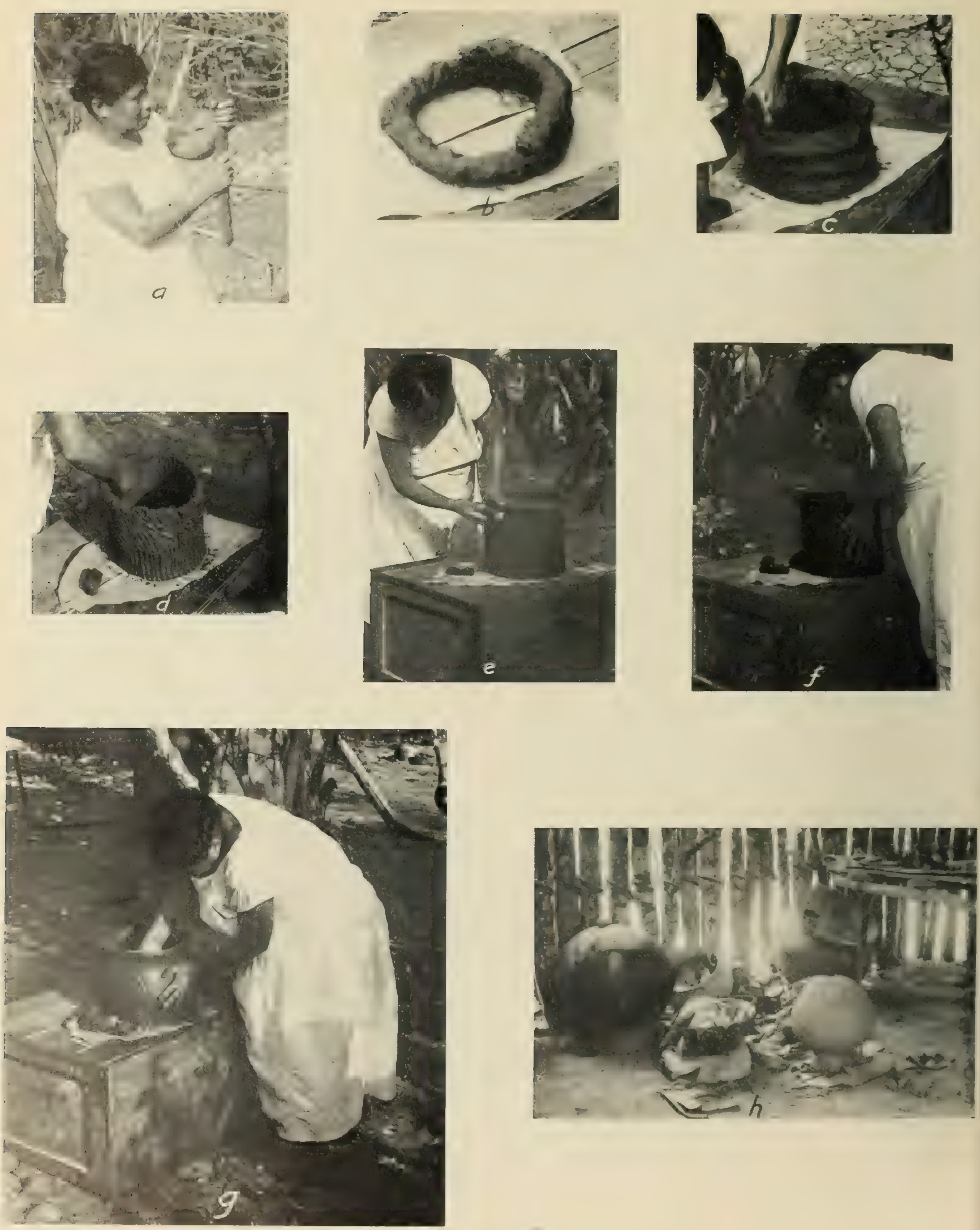


Plate 24.—**Pottery making.**

(For explanation, see p. 364.)

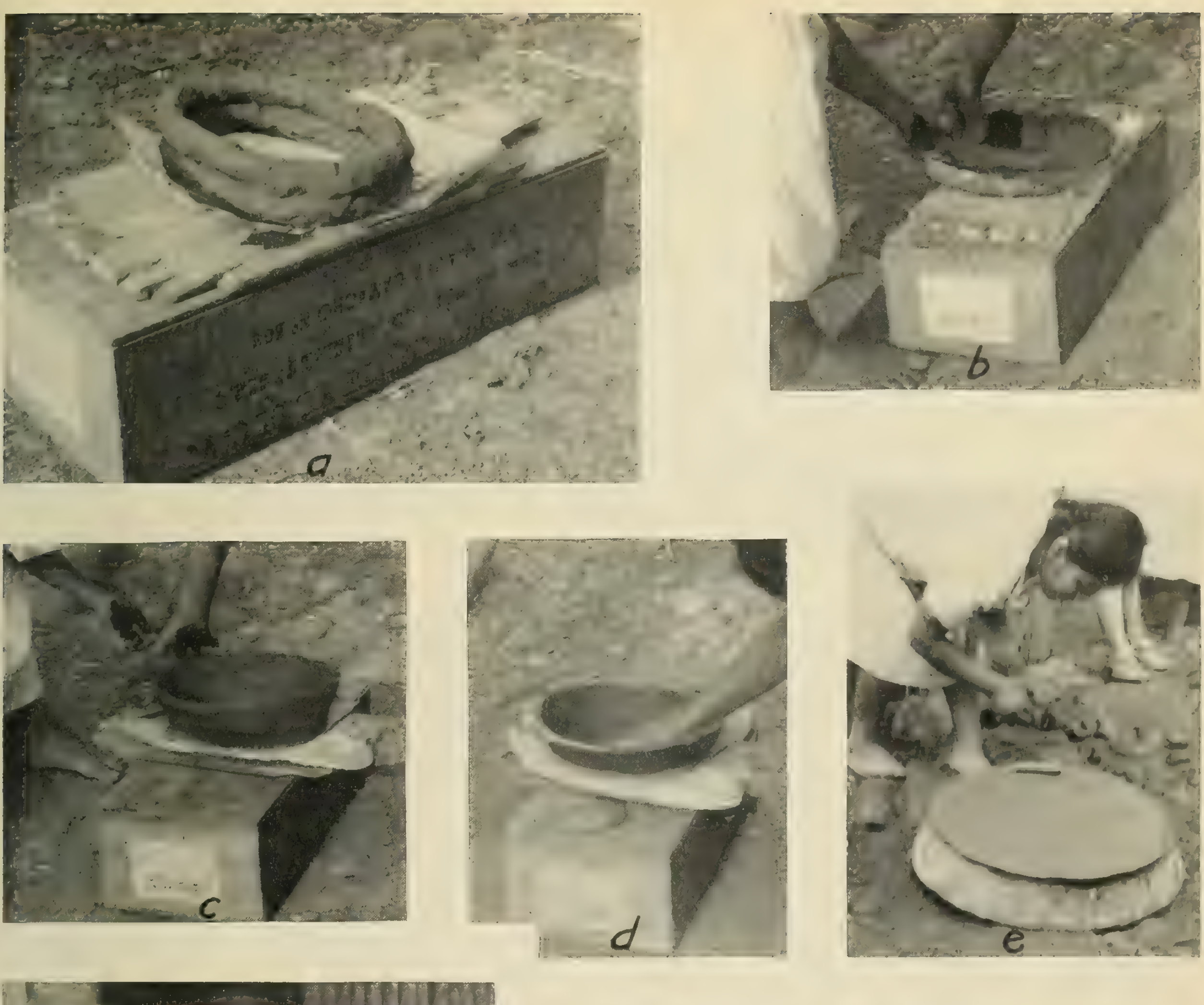


PLATE 25.—**Pottery making.**

(For explanation, see p. 364.)

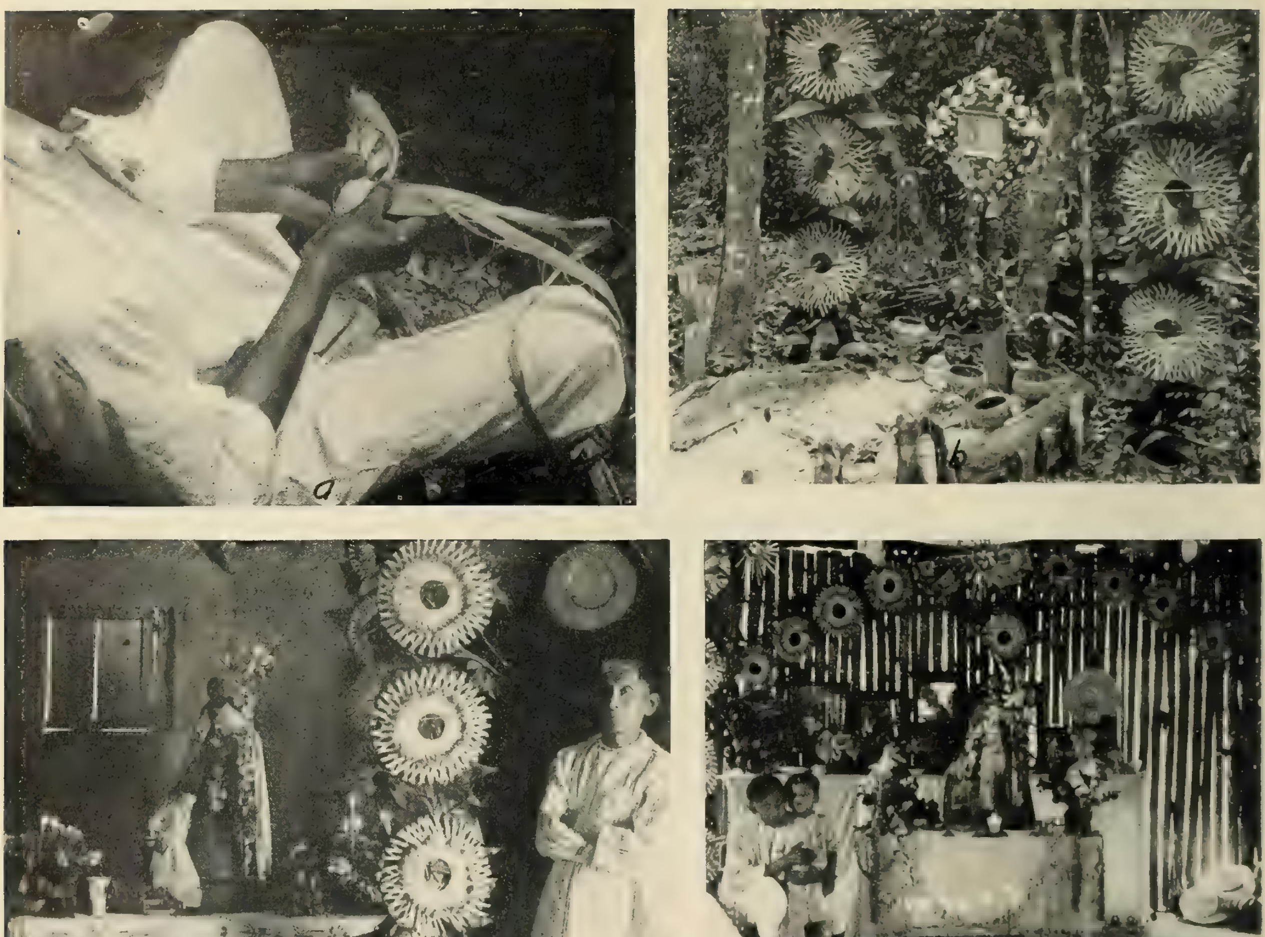


Plate 26.—**Braiding; palm ornaments.**

(For explanation, see p. 364.)

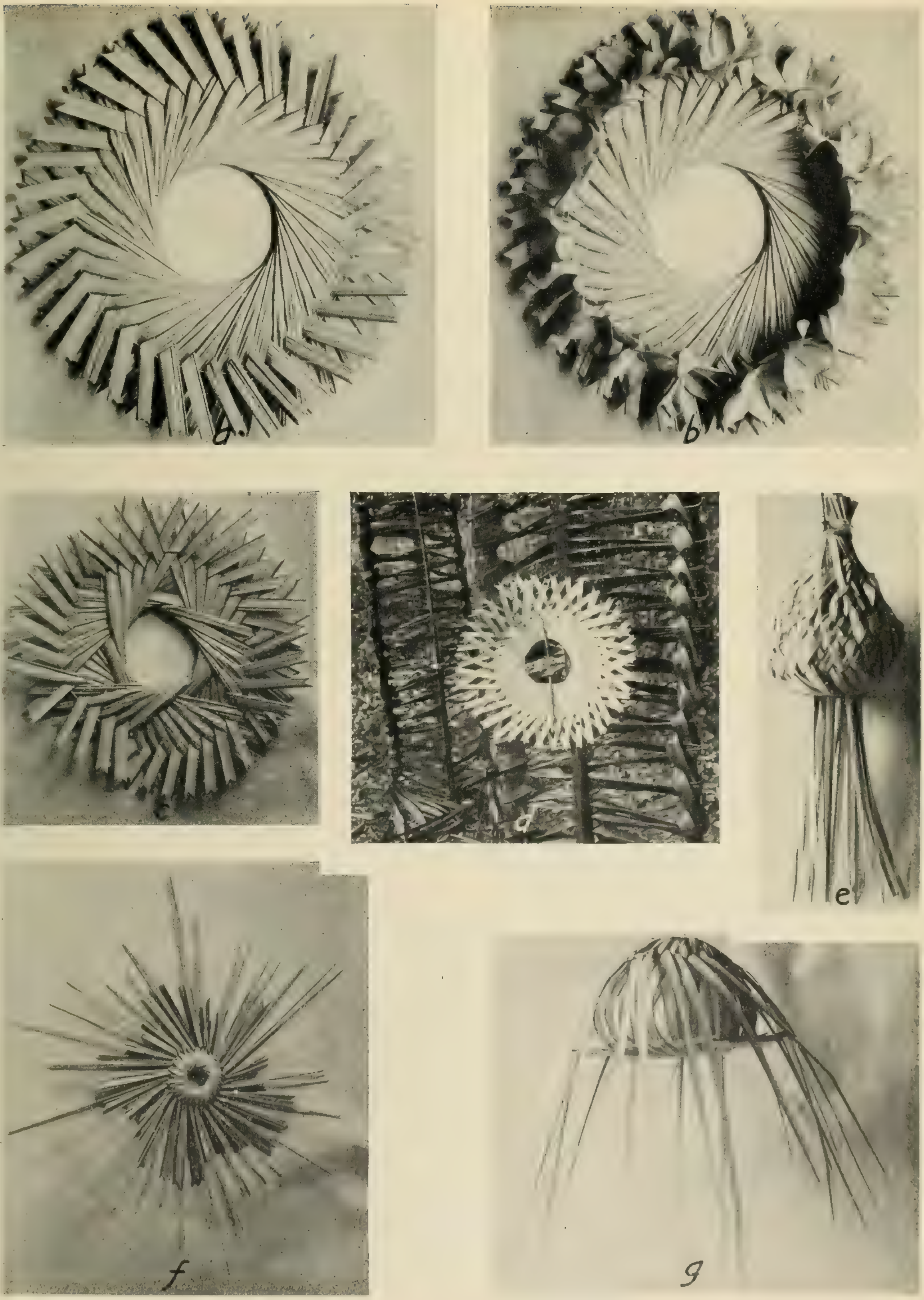


PLATE 27.—**Woven palm ornaments.**

(For explanation, see p. 364.)

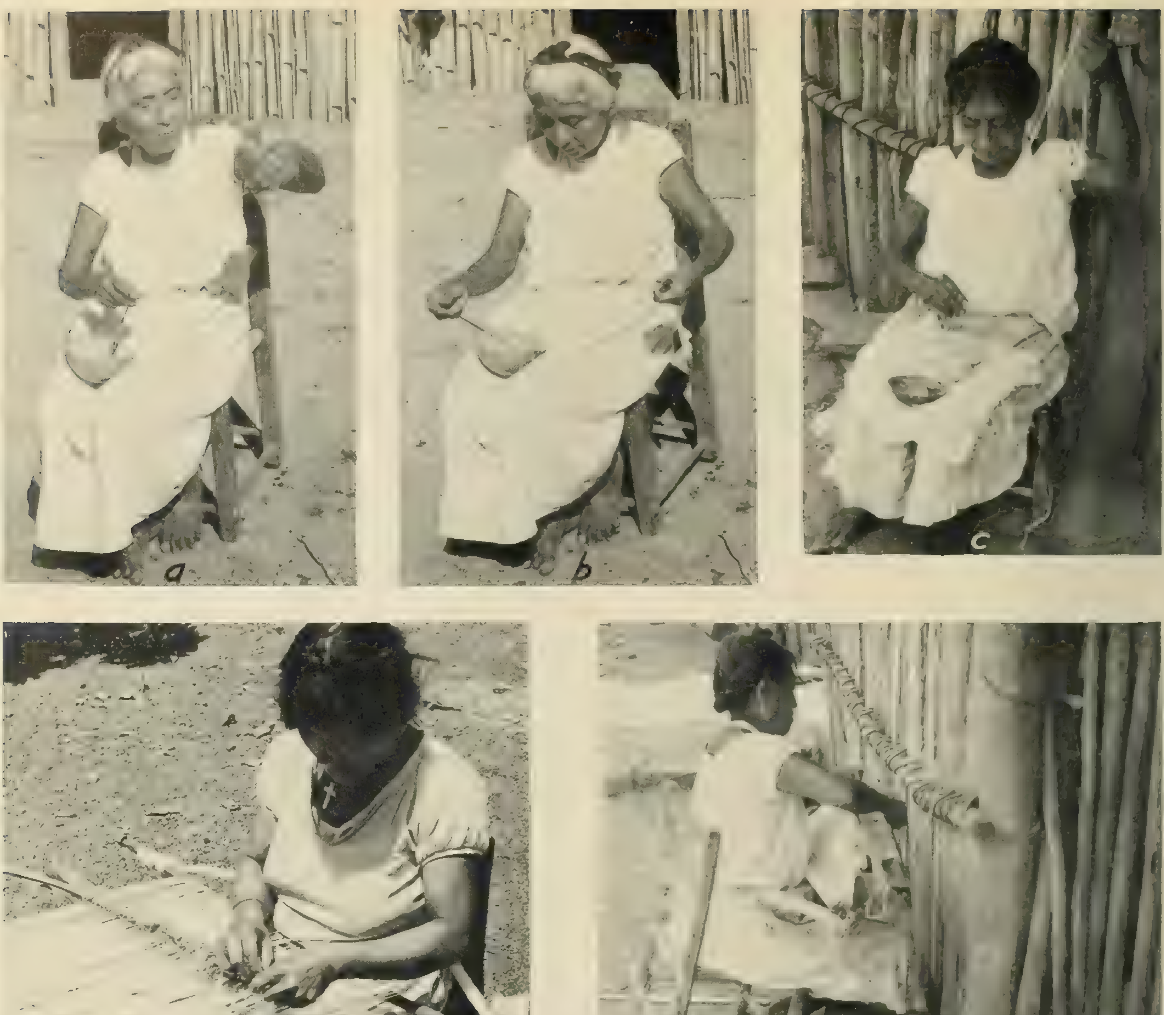


Plate 28.—**Spinning and weaving.**

(For explanation, see p. 364.)

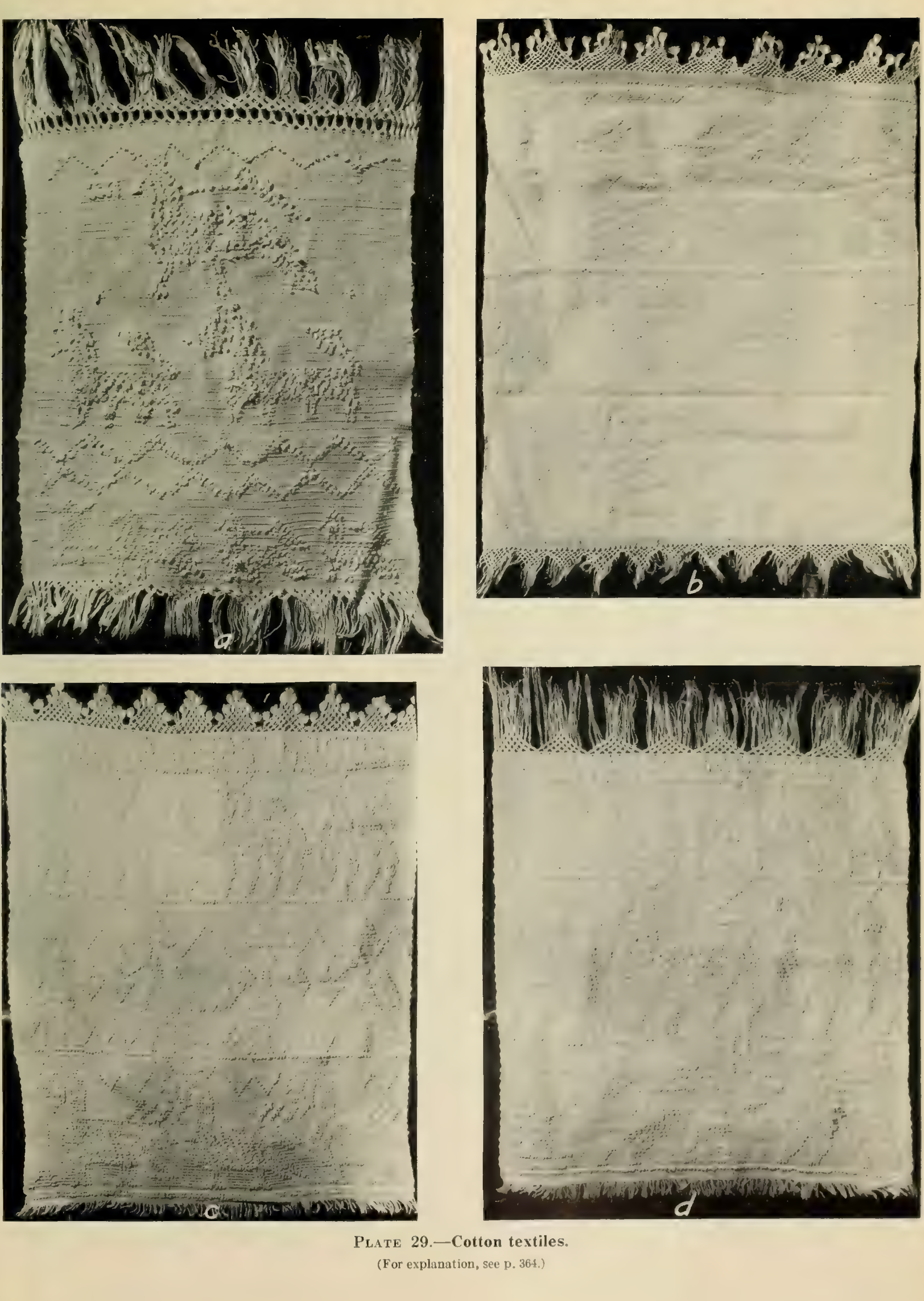


PLATE 29.—Cotton textiles.

(For explanation, see p. 364.)

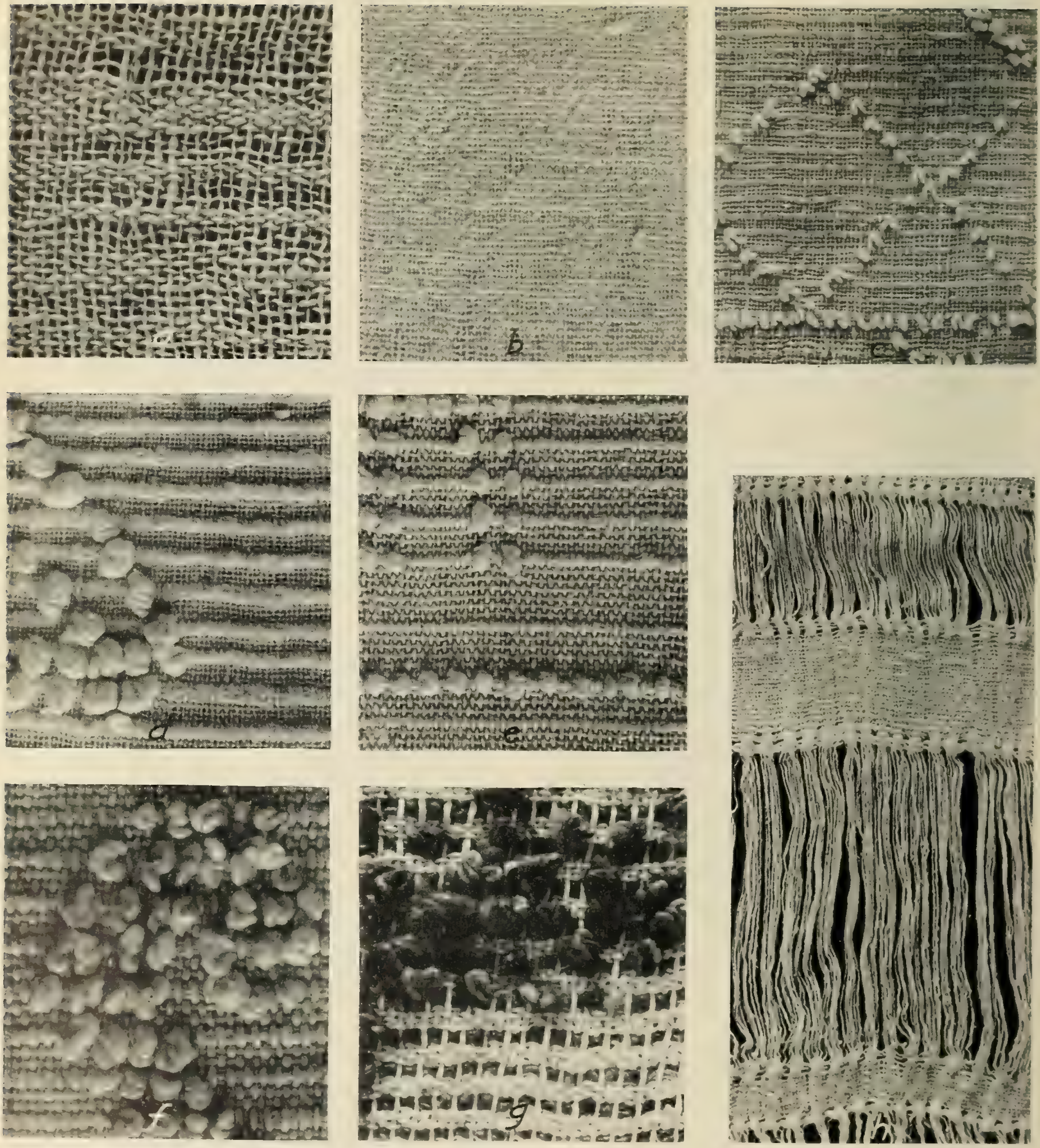
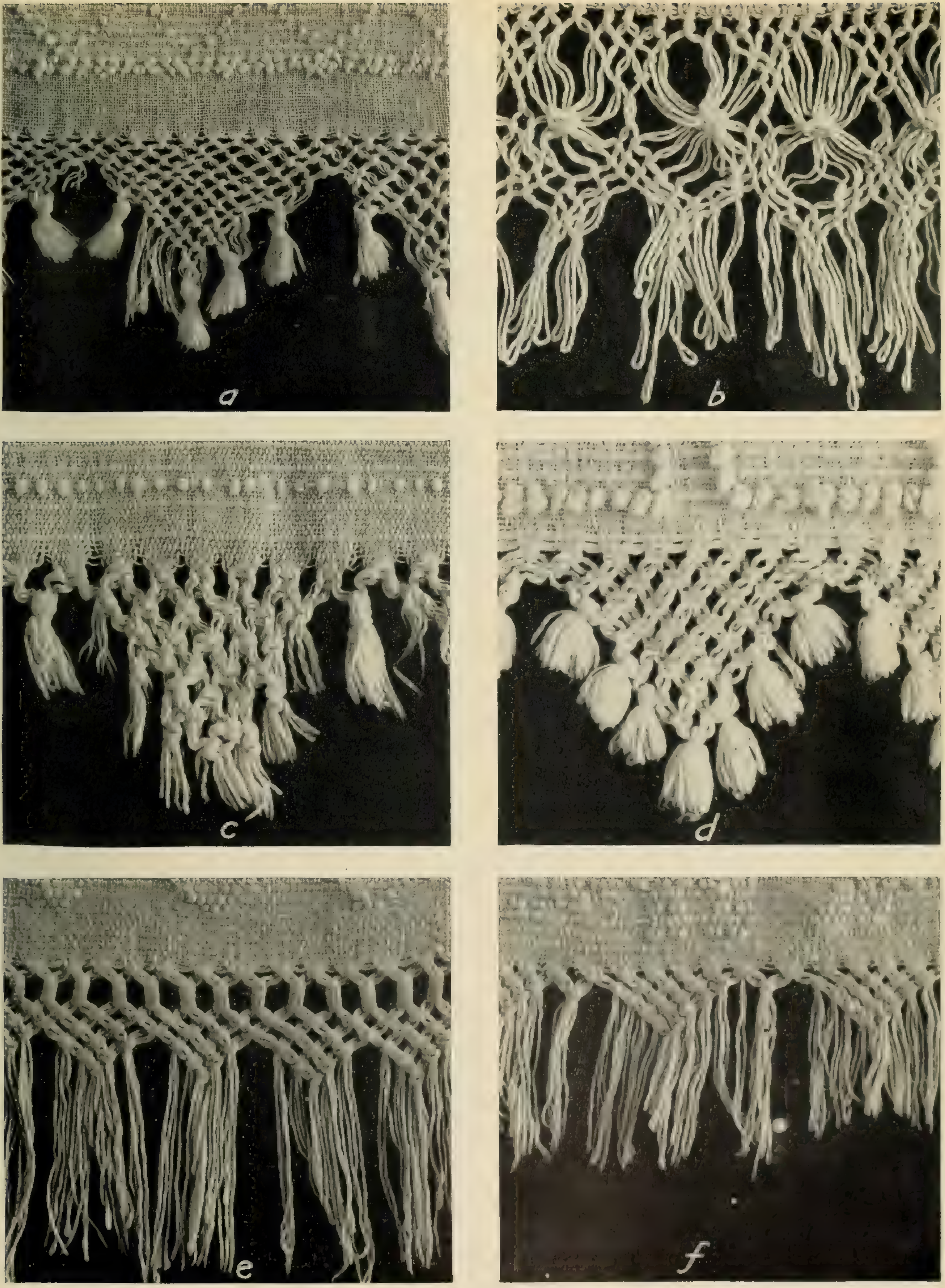


PLATE 30.—**Cotton textiles.**

(For explanation, see p. 364.)



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(For explanation, see p. 364.)

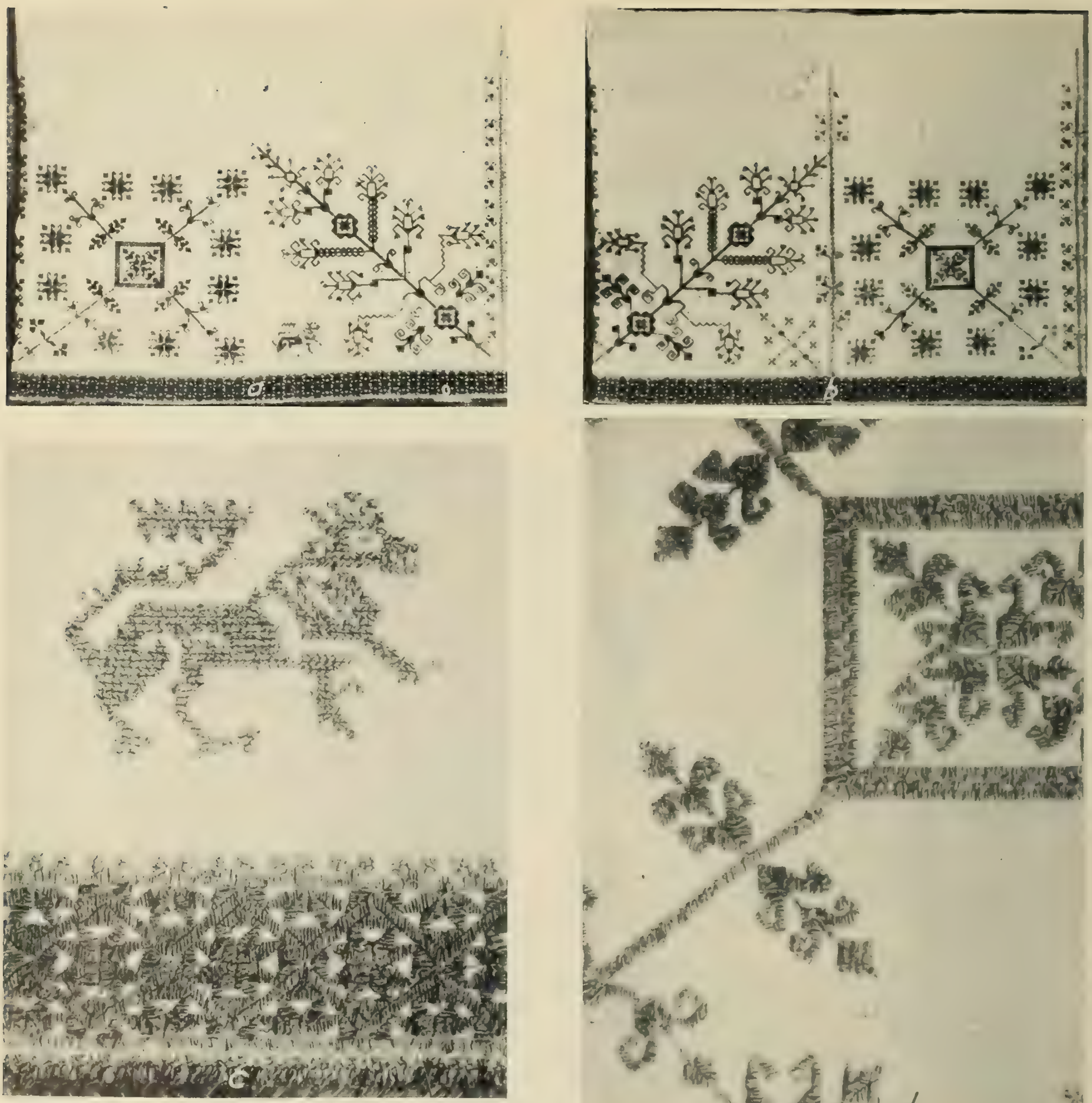

Plate 32.—**Embroidered skirt; woven belt.**

(For explanation, see p. 364.)

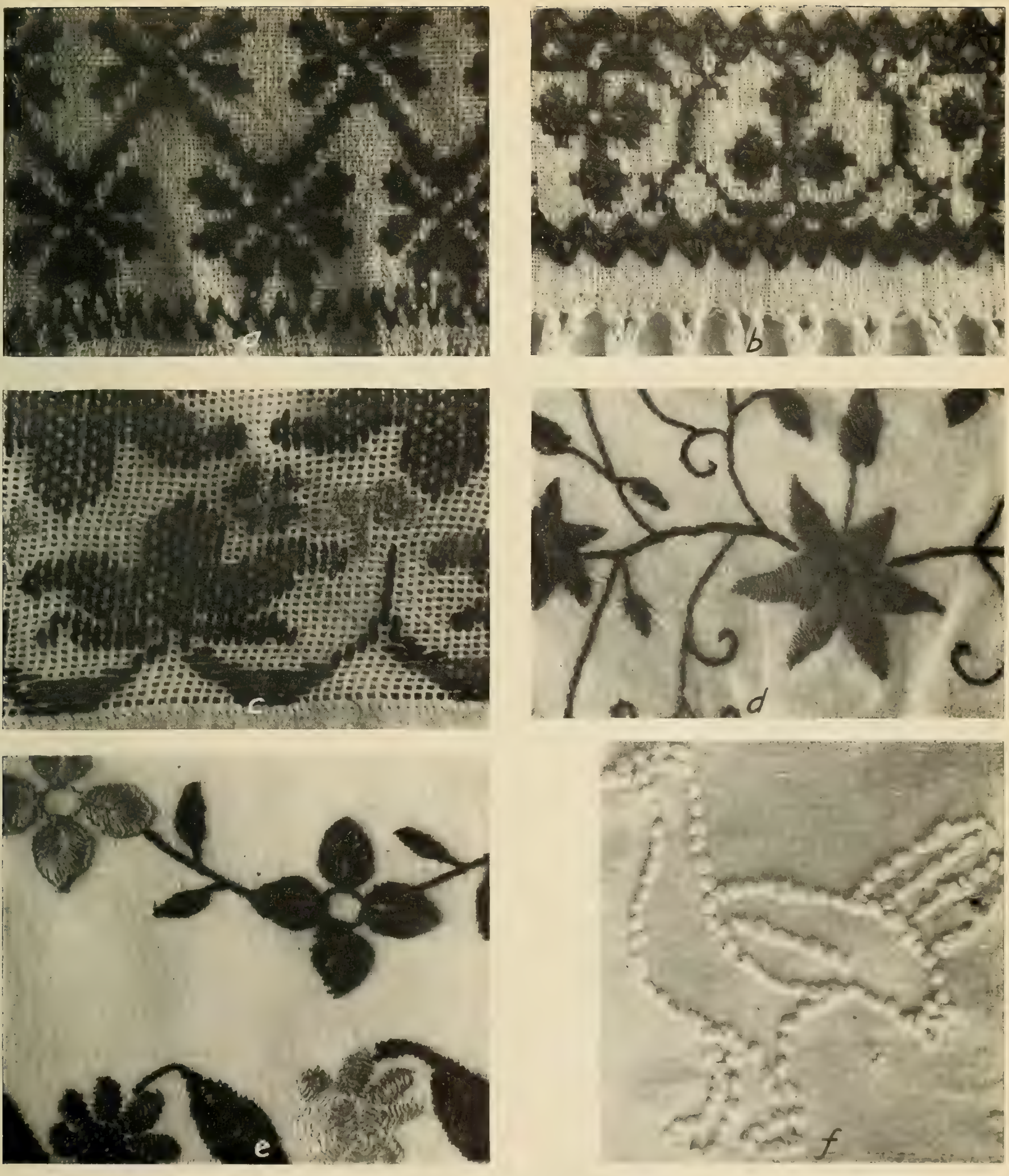

PLATE 33.—**Embroidery.**

(For explanation, see p. 364.)

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This index is by no means complete; it merely covers the main text and Appendix B in somewhat greater detail than does the table of contents. As a rule, it does not include material which appears in the tables. It is assumed, for example, that anyone who is particularly interested in the Mexican conquests will make direct use of the tables of Appendix B.

Appendix A does not lend itself to indexing, unless the names of all pueblos (tables 14, 15) and *encomenderos* (table 14) be included. Anyone interested in this rather special aspect of the study will find the pueblos in alphabetical order in table 14; in table 15, order is numerical, to agree with the entries on map 2.

An index to the genera of the herbarium specimens appears (pp. 341–346) at the end of Appendix C. Items of general interest in that Appendix and in Appendix D are referred to in the text, either of this volume or of Part 2, which is not yet published. Accordingly, detailed indexing of these two appendices would be essentially a duplication.

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PUBLICATION NO. 14

THE INDIAN CASTE OF PERU, 1795–1940

A POPULATION STUDY BASED UPON TAX RECORDS AND CENSUS REPORTS

by

GEORGE KUBLER

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Prepared in Cooperation with the United States Department of State as a Project of the Interdepartmental Committee on Scientific and Cultural Cooperation

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LETTER OF TRANSMITTAL

Smithsonian Institution,
Institute of Social Anthropology,
Washington 25, D. C., June 29, 1950.

Sir: I have the honor to transmit herewith a manuscript entitled "The Indian Caste of Peru, 1795–1940: A Population Study Based Upon Tax Records and Census Reports," by George Kubler, and to recommend that it be published as Publication Number 14 of the Institute of Social Anthropology.

Very respectfully yours,

Gordon R. Willey, *Acting Director.*

Dr. Alexander Wetmore,
Secretary, Smithsonian Institution.

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PREFACE

The writer collected the materials here presented while assigned to the service of the Institute of Social Anthropology in Lima, Peru, during 1948–49. The project grew from a seminar held in 1948 with Peruvian students of anthropology in the Universidad Nacional Mayor de San Marcos. The dearth of published demographic information, especially upon the period between 1795 and 1876, suggested a search for appropriate records of the time. The hope was almost immediately fulfilled by finding the tax registers for the period 1826 to 1854 in the Archivo Histórico of the Ministerio de Hacienda.

Federico Schwab, keeper of the Archivo Histórico, at once gave the group every facility for the study of these manuscript tax registers. For 8 months several people worked daily in the Archivo Histórico, abstracting and compiling the head-count figures by district and province. José Matos, the *jefe de práctica* at the Seminario de Estudios Etnológicos in the University, directed the work of abstracting the registers, which was entrusted to Raúl Rivera Serna and Julio Basto Girón. These friends also searched the Biblioteca Nacional for printed material. I am especially grateful to Raúl Rivera Serna for discovering several obscure items in early Peruvian newspapers. He and Humberto Ghersi, of the Instituto de Estudios Etnológicos, accompanied me on a trip to Trujillo and Piura, in the hope that we would find the missing registers for the northern coast provinces in one of the prefectural archives. We were disappointed in this, but we were rewarded by finding the entire correspondence of the period relating to taxation, in Trujillo and Piura, where the departmental Prefects showed many courtesies.

In Lima another group gave several months of their time to typing transcripts of the geographical reports or *informes* that accompany the tax registers. For this excellent work I am grateful to Rosalia Avalos and to Carmen Delgado.

During the winter months of 1949 the same group that had worked in the Archivo Histórico, transferred their activity to the Archivo Nacional, where Dr. Eduardo Coz Sarria gave them the run of the Sección de Historia. Here Raúl Rivera, Julio Basto, and Miguel Maticorena not only sorted but classified the entire division of *caxas reales*, or Colonial treasury accounts, consisting of several thousand volumes, in their search for further tax lists or population counts. The finds were few but important, and the ground was laid for a separate study by these workers of the fiscal aspects of Colonial Indian history. The search convinced us all that the missing registers would not easily be found in Lima, if at all.

At the same time José Matos directed the work of another group in the Archivo Arzobispal in Lima, upon census papers from 1755 to 1813. For various reasons these materials cannot be used here, although the results are relevant to general demographic study in Peru.

As a whole the work could not have been done without the active support and cooperation of the professors of the Instituto de Estudios Etnológicos. I wish especially to thank my friends Dr. Luis Valcárcel and Dr. Jorge C. Muelle for innumerable courtesies and steady support to all engaged in the investigation.

The study here published is based upon but part of the materials collected. The full file of notes and abstracts on other demographic questions was deposited in the Seminario de Estudios Etnológicos at San Marcos University, where it may be consulted by those interested. Our study falls far short of exhausting the interest and content of the tax registers for the nineteenth century. With further work these same registers would yield detailed information about the composition of the Peruvian population during the nineteenth century, in respect to such topics as the sex ratio, approximate age distribution, marital percentages, statistics on fertility and mortality; and the birth and death rates per thousand population. For lack of time the present study treats only of Indian and non-Indian caste. It is intended less as a demographic study than as a preliminary investigation of the social composition of the Peruvian population during the past 150 years.

G. K.
Yale University.

LIST OF ABBREVIATIONS

AHMH	Archivo Histórico del Ministerio de Hacienda, Lima
ANB	Archivo Nacional, Bogotá, Colombia
ANL	Archivo Nacional, Lima
RR. EE	Archivo del Ministerio de Relaciones Exteriores, Lima
AA	Archivo Arzobispal, Lima
BNL	Biblioteca Nacional, Lima. Sección manuscritos

The Indian Caste of Peru, 1795–1940

A Population Study Based Upon Tax Records and Census Reports

By George Kubler

INTRODUCTION: THE NINETEENTH-CENTURY TAX REGISTERS

The first half-century of Peruvian independence from Spain has for all practical purposes been an ethnohistorical blank. Knowledge of demographic processes until 1876 has been almost entirely lacking. The status, treatment, and behavior of the Indian population were virtually unknown. The processes and the rate of formation of the immense mestizo population of modern Peru were unknown. The effects of large and rapid concentration of land in the hands of few owners, are still undescribed from an ethnohistorical point of view. For all these problems evidence has heretofore been lacking, excepting in the random impressions of foreign travelers in Peru.

Peru fortunately possesses an abundant demographic record covering the second quarter of the nineteenth century. It appears in the tax lists, or *matrículas*, of the period 1826–54. In these tax lists the inhabitants of Peru are classified by caste and by vocation. The *matrículas* (pl. 1 gives a sample of their workmanship) are mainly preserved in the Archivo Histórico del Ministerio de Hacienda, where they have been cataloged and filed under the direction of Federico Schwab. Several more volumes of the same series are kept in the Archivo Nacional and in the archive of the Ministerio de Relaciones Exteriores, at the Palacio Torre Tagle: they are noted in the text and Bibliography. The main collection, numbering 160 volumes at the Archivo Histórico del Ministerio de Hacienda, is incomplete. Reports from many provinces and in many quinquennial periods are lacking. As the period 1826–54 contains six taxation periods at 5-year intervals, during which the head count was made for all Peruvians in 58 provinces,[1] we may assume that 348 reports would ideally have been prepared, each in four sections. But provincial cooperation frequently failed. Many provinces sent no reports to Lima. Many reports were lost in transit and in the archival disorder of the past 80 years. Where and when the missing reports will be found is a matter of conjecture. For the present it is clear that the surviving *matrículas*, 164 in number (table 1), allow a remarkably detailed interpretation of Peruvian demographic processes, when combined with other sources of the period. Such sources are preserved in the Archivo Histórico, in a separate file of decrees and correspondence relating to tax legislation, tax collection, and administrative procedure (see Bibliography, under Archival Sources).

As in the Colonial era, demographic information was a byproduct of tax collection. The Colonial system of tribute, revived in 1826 as the *contribución de indígenas*, continued in force until 1854. The tax collectors of this era followed the practice of their Colonial predecessors in the main lines, but they enriched it with a more inclusive network of categories of taxation. Through a number of legislative modifications the fiscal officers of the period strove for a system of taxation whereby every Peruvian would pay taxes in one of four categories: as landowner or tenant; as artisan; as mestizo laborer; or as Indian laborer. These four exhaustive classes were designated as follows:

---

[1] José Gregorio Paredes, MS., correspondence from the Contaduría general de valores, to the Ministro de Estado en el despacho de Hacienda. August 18, 1834. AHMH, O. L. 233/193.

José Gregorio Paredes (1799–1839) was "cosmógrafo mayor de la república" and the author of several almanacs. See Schwab, 1948, p. 14, and No. 92a. Paredes was chief accountant for the Treasury from 1833 on.

In 1834 Paredes reported in the correspondence cited above that the 58 provinces of Peru had yielded 118 registers of all classes. He recommended that separate books be used for reporting the four classes of taxpayers.

(1) Landowners and tenants.	*contribución de predios urbanos y rusticos.*
(2) Artisans	*contribución de patentes* (or *gremios*).
(3) Mestizo and Negro laborers.	*contribución de castas.*
(4) Indian laborers	*contribución de indígenas.*

The intention to extend taxation to the entire nation, regardless of race or status, is claimed as a Republican innovation in 1831:

> La Ley de 11 de Agosto 1826, despues de haber establecido la contribucion de indijenas, conocida en el antiguo Govierno por la denominacion de tributo de indios, hiso extensivo este gravamen directo a toda la Nacion bajo el titulo de contribucion de castas, con una tasa personal de 5 pesos por cabeza de contribuyente, y con el 4 percent sobre el provecho neto de los capitales fixos, como predios rusticos y urbanos, y de los circulantes en todo genero de industria.[2]
>
> (The law of August 11, 1826, after having established the levy on Indians, known under the former Government as Indian tribute, extended this direct tax to the entire Nation under the title of the levy upon the castes, with personal tax of 5 pesos per family head, and with 4 percent upon the net return of such capital values as urban and rural landholdings, and the commodities of every kind of industry.)

The system is more diversified and inclusive than Colonial tribute, which affected only the Indian laborers. In theory, under Republican administration, a *matrícula* or register, covered all taxpayers. Hence all heads of families and their dependents, as well as single persons, were registered anew every 5 years, in four sections, one for each class of taxpayers, in all 58 provinces. In each province, four *matrículas* were to be prepared by the appointed fiscal officers. Each *matrícula* is arranged by districts, which corresponded closely to the curacies of the ecclesiastical government. Each district comprises several towns, villages, or *ayllus*. In each settlement the families are enumerated and classified by age, sex, and civil status, in nine groups. For each town a record of births, marriages, and deaths in the preceding 5-year period is appended (pl. 2 illustrates a sample summary of the data collected in each *matrícula*).

In actual practice, the surviving *matrículas* provide a firm basis for study. Fifty-one provinces are accounted for in the collection at the Archivo Histórico, and for certain provinces the record is nearly continuous from 1826 to 1854 at 5-year intervals. From certain provinces, especially those of the northern coast above Santa Province, very little has survived, and we may indeed doubt whether the local authorities ever complied with the tax laws by preparing the required *matrículas*. Other lines of evidence nevertheless allow us to fill in some gaps for these provinces.

Among surviving registers the relative importance of the various *matrículas* for each province may be judged by two standards. From the point of view of the nineteenth-century tax collector, and of the Government, only the *contribución de indígenas* was significant. The other three tax classes, although they were carried on the books for substantial percentages of expected State income, were never properly collected. From the point of view of the modern student, only the registers of the *contribución de indígenas* and of the *contribución de castas* were complete enough to yield information valid today. The artisans' tax registers were incomplete and artificial, as well as numerically insignificant. The population of Peru, 1826–54, was overwhelmingly a population of rural Indians and mestizos, rather than of artisans. A separate study of the artisans' registers will surely be useful for other studies. It cannot be incorporated here, where the principal object of attention will be the Indian population from 1795 to 1940.

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[2] José Serra, MS. "Memoria sobre el curso y progreso de las contribuciones directas del Peru en los años de 1830 y 1831," AHMH, O. L. 216/637. 7 fos. Serra preceded Paredes as chief accountant in the *Contaduría general de contribuciones*. His attempts to organize the collection of taxes in an efficient manner that would reduce peculation by provincial officials, produced so much conflict that his office was abolished, and his post taken over by Paredes. His memoir, cited above, displays a keen intellect thoroughly aware of the institutional decadence of his time.

COLONIAL TRIBUTE AND CASTE

The Colonial perception of tribute pertained only to Indians. As tribute the levy was juridically regarded as "a just token of the vassalage owed by Natives to the Sovereign," against which the Crown was empowered to charge ecclesiastical, administrative, and educational salaries and expenses for the benefit of the Indians.[3]

More extensive tax laws were enacted by the tribute regulations of 1778, as formulated by José Antonio de Areche.[4] These regulations codified the disorders of earlier practice, and laid the foundations for Republican taxation. A new levy was inaugurated at this time, called *contribución militar*. Its rubric included for the first time the mestizo, Cholo, sambo, and mulatto castes.[5] The Indian Rebellion of 1780 canceled the program, but in 1784 the fiscal reforms of Jorge Escobedo,[6] Areche's successor as Inspector General of Treasury, were put into effect. The method of preparing the tax registers was prescribed in minute detail by the *Reglamento de Matrículas*. A newly created agency, the *Contaduría de Tributos*, supervised collections and accounting.[7] Later Republican taxation is the direct continuation of the efforts of Areche and Escobedo. It is worth noting that these Late Colonial economic reforms nearly produced the collapse of the Colonial regime in 1780, and that they contributed to the *criollo* insurrection of the Wars of Independence. The same reforms, once Independence had been achieved, were imposed upon the Peruvian people with doctrinaire rigidity.

On the other hand tribute was abolished under Colonial government as early as 1811, in a belated effort to ally the Indians with the Crown, and in an effort that was repeated with equally immediate failure in 1854 under Republican government (see p. 6 and footnote).

The Royal Order of 1811 has never been adequately studied. It provided for the liberation of the Indians from all tribute obligations. It also established their civil rights as equal in all respects to those of the Spanish settlers of the colony.[8] Before a year had passed, however, the Treasury in Lima was unable to meet its obligations, especially to the southern army. In November 1812,

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[3] MS. "Libro mayor de la Contaduria Grãl de Tributos del Cargo de su Contador Don Juan José de Leuro: y comprehende la Cuenta del año de 1801." ANL, uncataloged, 58 fos.

"Se estableciò la contribucion de este Ramo en las Provincias de este Reino, como una justa Señal, y manifestacion del Vasallage debido por sus Naturales al soberano, conforme à lo prescripto en Real Cedula del señor Emperador Carlos Quinto expedida en Valladolid a 26 de junio de 1523 concordante con las Leyes 1^{a} tit. 5 lib. 6: 3^{a} tit. 7: 3^{a} y 4^{a} tit. 9 lib. 8 de las Recopiladas. Sobre su grueza total cargan los sínodos de los Curas; Salarios de los Subdelegados; los de los Maestros de Escuela Preceptores; asignaciones para fábricas de Yglesias, Catedrales, y Parroquiales de Yndios; y otros piadozas intenciones con que la tiene S. M. gravada." Fo. 2.

On Colonial tribute in general, see Kubler, 1946, pp. 370–371, and the detailed treatment by Marcelo Sánchez Espinosa, 1939–42. This study, by a pupil of Emilio Romero, was prepared as a *tésis de bachillerato* at San Marcos in Lima. It lacks several installments. The author reports that his MS. was lost by the printer after the demise of the journal in 1942 (verbal communication).

[4] Appointed Visitador General in 1776, Areche published his *Instrucción* on tribute collection in 1778, and remained in office as Inspector General of the Royal Treasury in the Viceroyalty until 1781, when he was replaced by Jorge Escobedo. (See Sánchez Espinosa, 1940, p. 93; Schwab, 1947, p. 113, No. 309.)

[5] Sánchez Espinosa, 1940, p. 93, characterizes Areche's tax program among the aggravating conditions leading to the Indian Rebellion of 1780. On the meaning of Cholo, see p. 36.

[6] Jorge Escobedo also reformed the municipal government and the police of Lima. See his extremely rare printed works on these matters in the National Library, Lima. Escobedo died before 1805, and was unable to witness the Republican fruition of his reforms. On Escobedo's offices and appointments, see Schwab, 1947, Nos. 309, 320, 327, 1329.

[7] Escobedo's *Instrucción Metódica* was printed in 1784, but the writer has been unable to find a copy. The (MS.?) version in the Archivo General de la Nación, Buenos Aires, was reproduced in part by V. M. Maúrtua, 1906, vol. 7, pp. 357–362. In this version Article I is incomplete; II–XIII are entirely lacking, and XXIII is incomplete. In 1820 Escobedo's *Instrucción* was printed again in an edition of 200 copies, of which no example is known. The order to reprint in 1820 is preserved in an uncataloged MS., BNL, entitled "Instruccion de Matriculas de Indios por [Julian] Orodea [de la Cuesta] Gral 605. 1820."

A letter by José Serra (AHMH, O. L. 216/649), dated December 16, 1831, refers to a fire that destroyed the archives of the Contaduría de Tributos. No date is given for the fire, but the exceptional rarity of late Colonial manuscript papers on tribute may be assigned to such causes.

[8] F. Schwab, 1947, p. 552, No. 2338. For the following transcription of the entire text, I am indebted to José Matos:

Para libertar a los Indios del Tributo igualandolos en todo a la clase de Españoles/ S. E./ S. S./Regente/Pino/ Quadrado/ Arnaiz/ Moreno/ Valle/ Palomeque/El Conde/

> Lima y Septiembre 2 de 1811=Visto este Expediente en el R^{l} Acuerdo de Justicia con asistencia del Exm̄o Senor Virrey y los S. S. del margen, presentes los S. S. Fiscales, fueron de uniforme dictamen, q^{e} se guarde, cumpla y execute, y se publique p^{r} Bando la R^{l} orden de 13 de Março del presente ano remitida con fha. 10 de Abril proximo pasado a nombre del Supremo Consejo de Rexencia, en q^{e} las soberanas Cortes libertan del Tributo a los Indios igualandolos en todo a la clace de Españoles, Consultandose a S. M. con Testimonio del Expediente anteriorm^{te} formado sobre este particular=Lima y Sept^{re} 4 de 1811=Cumplase el antesed^{te} auto del Rl Acuerdo y en consecuencia imprimase el competente numero de Exemplares del Bando q^{e} ha de entenderse con inclucion del R^{l} Decreto relativo a la livertad del Tributo de los Indios ingulandolos en todo con la clace de Espanoles p^{a} publicarlo en esta Cap^{l} y en las de las Intendencias y Cabeza de Partidos de este Virreynato circulandolo al efecto a los S. S. Governadores Intendentes con estrecho encargo de su puntual observancia; y p^{a} q^{e} los Indios tengan quanto antes anticipada noticia de la concideracion q^{e} han merecido a la soberania de las Cortes, escrivase conforme a ello p^{r} el Extraordinario de hoy a las Intendencias de la Carrera del Cusco y al S^{or} D^{n} Jose Man^{l} de Goyeneche. Tomese razon de dha. soberana resolucion y esta providencia en el Trãl de Cuentas, Cajas Reales y Contad^{a} General de Tributos, p^{r} lo perteneciente al ramo de Tributos hta el semestre de S^{n} Juan ultimo a fin de q^{e} recauden y enteren lo adecuado a la mayor brevedad, y fho dese c^{ta} a S. M. con testimonio del Expediente formado anteriorm^{te} sobre este particular q^{e} se sacara p^{r} duplicado a la mayor brevedad=Abascal=Simon Ravago=tomose razon en el Tribunal de Ctãs en 17 de Sept^{re} y en esta R^{l} Caxa en 13. de Noviembre de 1811=Es copia del Orig^{l}=Rubric.

Viceroy Abascal issued a decree confirming the abolition of tribute, but establishing a new *contribución provisional.* This was to be levied upon Indians, as possessors of equal civil rights with the Spaniards of the colony.[9]

At about this time, the extension of "equal civil rights" to other classes of the population, i. e., the *castas,* was under debate in the Spanish Cortés, where the Deputy for America spoke passionately against their exclusion from the new social contract: [10]

> . . . el labrador, minero é industrial ó manufacturero . . . son los que se llaman castas . . . ¿quien ha sostenido para España aquellos vastos dominios con su sangre, sino las castas, pues los indios son excluidos de la milicia?
>
> (The laborer and miner, the artisan and the manufacturer compose the "castes." Who but the "castes" have shed their blood to maintain these vast dominions for Spain, since the Indians are excluded from military service?)

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[9] Schwab, 1947, p. 564, No. 2440: the entire MS. copy of the decree is in AHMH, Lib. 1170, f. 201 v. The entire text is here transcribed because of its importance in studies of the period:

> En la ciudad de los Reyes del Peru en 14 dias del mes de Nov^{re} de 1812 habiendose congrega/do Junta Gen^l Extraordinaria de Tribunales a que asistieron el E. S. Virrey el Illmo Sr Ar/zobispo de esta Capital, el E. S. Consejero de estado conde de Vista florida y los SS. Dr. Dn./ Jose Silva Obispo electo de Huamanga D^n Juan del Pino Manrique D^n Francisco Xavier/ Moreno, D^n Man^l M^a del Valle Dn tomas Palomeque Oydores de esta R^l Audiencia/ Dn Juan de Oyarzabal del Consejo de S. M. superintendente de la R^l Casa de Moneda/ D^n Juan Bazo y Berri Alcalde de corte D^n Jose Pareja Fiscal de lo Civil D^n Miguel/ de Eyzaguirre de lo criminal y Protector Gen^l de Naturales D^n Pedro Zalduegui Inquisidor/ el Marq^e de Valde Lirios y D^n Fern^{do} Zambrano Ministros del Tribunal mōr de Ctās/ D^n Juan M^a Galvez Intend^{te} de Exto y de esta Cap^l D^n Juan José de Leuro Intendente/ de Exto y contador Gen^l de Tributos y D^n Joaquin Bonet Ministro honorario del R^l trib mōr/de Ctas. e interino de estas R^s Caxas el Marq^e de Torre Tagle y D^n Andres de Salazar/ Alcaldes ordinarios de esta Ciudad D D D^n Ignacio Mier y D^n Matias de Querejasi/ Dignidades de est S^{ta} Iglesia Catedral D^n Antonio de Elizarde y D^n Man^l Torre Reg^e /y Procurador Gen^l del Exmo Cabildo D^n Antonio Alvarez de Villar y D^n Fran^{co} Izcue Ministros del R^l Tribunal de Mineria D^n Pedro Bazo del R^l trāl de Mi/neria D^n Pedro Truxillo Director Gen^l de la R^{ta} de Tabacos D^n Ant^o Izquierdo Ad/ ministrador de la R^l Aduana y D^n Domingo de Lainfiesta de Temporalidades/ Hizo presente el E. S. Virrey el verdad^o Estado en que se halla este Erario exha/usto de fondos y sin recursos ni arbitrios prontos de que acopiarlos gravado/ con crecido numero de creditos que por la generocidad y buena fee con que/ han sido franqueados de mandan su ejecutivo pago y sobre todo necesitado/ de continuar los Auxilios al Exto del Alto Peru y de mas puntos q^e/ resguardan estas leales y fieles Provincias de los perfidos designios de los/ insurgentes y que en tan apuradas circunstancias habia recivido S. E./ repetidos recursos de varios comunidades y Ayllos de Indios solicitando se/ les admitiese la misma Cantidad que satisfacian p^r razon de Tributo/ antes de la gracia y exencion que les fue concedido p^r las tristes [ha] za/nas de la nacion pues en esa Voluntad y oferta daban una prueba de/ su gratitud y amor a la sagrada causa de la Patria y el Estado y siendo/ muy recomendable en el particlar [sic] los informes del Sr Presidente interino/ del Cuzco y reverendo Obispo de la Paz Dn Remigio de Santa y Ortega leydos/ estos y los informes del S^r Contador Gen^l de tributos Mtros Geñ trib^l mayor de cuentas/ y ultimam^{te} expuesto p^r los SS Fiscales y lo que en la Junta expuso de palabra el S^r Fiscal/Protector (pidiendo se insertase en la acta como asi se acordo) y es reducido a que elevado el/ Indio a la clase de Espanol no puede renunciar los Derechos que como tal le corresponden,/ mucho mas quando no aparece de los Docum^{tos} antes citados haberse practicado el Examen/ de su voluntad del modo individual que ser debia p^r lo que en razon de su Minist^o pedia se/ declarase que sin haber lugar a ese altanam^{to} debia p^r lo tanto satisfacer desde haora las/ cantidades que se exigen de los demas Espanoles. Visto y examinado todo con la detenida aten/cion que exigue su importancia y hoydo el digtamen del muy Revdo senor Arzobispo/ el q^e con el pulso conocim^{tos} practicados y experiencia adquirida en el manejo de los/ Indios produjo en el particular resolvieron de uniforme Digtamen que igualada/ la nacion indica a la Espanola segun lo sancionado en nuestra constitucion ya publicada/ y obedecida no podian disminuirse en la menor parte las prerogativas y distinciones de q^e/gozan todos los Individuos que forman esta eroica Monarquia mas por lo tanto deben seg^n/ el Articulo 339 de la constitucion entrar en el cupa de las contribuciones segun/ sus facultades sin excepcion ni privileguio alguno. Que el senalar y aprobar el repar/timiento de estas toca y pertenece seg^n el articulo 335 a las Juntas provinciales/ que ha un no se han establesido y que sugetan al indio desde el dia p^r su igualacion con el es/panol a todas las contribuciones que se exigen de este y en el modo y forma que se quere/ recaudar era expuesta y arriesgado aturbarla quietud de la provincias por ser obra/ lenta del Exemplo y la ilustracion desaraigarlo de sus antiguas practicas/ y costumbres y de sutenar [sic] adhecion a no repararse de lo que ejecutaron/ (fo. 202) sus mayores, Que la indagacion individual era sino imposible a lo menos muy dilatada y el/ dia y las urgencias actuales no daban lugar a esas esperas q^e produsirian que en/ tanto se mantuviese el Indio sin satisfacer ni los tributos ni los Drōs: como se halla en el dia/ y desde la publicacion de la gracia concedida p^r las Cortes Geñ. y q^e consiliandose todos/ los incovenientes que p^r una y otra parte se han ponderado con admitir la volun/tad y oferta q^e hizieron los Partidos o comunidades de continuar no en la paga/ del tributo pues este nombre es incompatible con la dignidad de siudadano Espa/nol sino con el entero de esa Cantidad que se titurara contrib^n provicional en el entre/ tanto q^e se extienda el reglam^{to} Gen^l q^e a todos comprehenda no faltando en nada/ esta determinacion a la sansionado p^r los Articulos de la constituc^n relativos/ a los privilegios y distinciones de la nacion Indica, pues q^e solo es un interi/no metodo p^a el cobro de los Derechos que son debidos al Estado y el/ que siendo voluntaria aparta toda idea de coaccion y violencia ma/nifestandose la Espontaneidad individual del pago en el mismo hecho de estar en libertad toda/ Provincia Partido o Ayllo de satisfacer las contribuciones establecidas en la cantidad y modo/ con q^e se exigen de los demas Ciudadanos Espanoles o en el provincional medio q^e ellas/ mismas han adoptado p^a lo que se circulara esta providencia p^r medio de los SS. Intend^e de Provincia muy Rever^{do} Arzobispo y RR. Obispos para q^e aciendoles ententer/ a los Indios p^r conducto de los subdelegados y curas Parrocos estar libres de la obliga/cion de pagar tributo y en su arbitrio y voluntad eleguir a la satisfacion de/ esta cantidad como contribucion provicional enterandola en el tiempo debido y/ correspondiente al proximo Semestre de Navidad o el pago de Derechos y demas penciones/ q^e contribuyen los demas Espanoles debiendose activar el Exped^{te} Sobre extincion/ de Mita y exterminio de los abusos y vejamenes q^e p^r razon de este cobro y qual/ quiera otra causa han dado motivo a las quejas y reclamos q^e se han expuesto a la/ superioridad q^e Ya de antemano se ordeno en acta de 11 de Julio de este presente/ ano y Dec^{to} de 13 del mismo en q^e se encargo al S^r Contador Gen^l de tri/ butos promoviera en Expediente separado estos tan esenciales puntos p^a/ su resoluc^n y p^a el mismo efecto publiquese en la Gazeta de Govierno y sacan/ dose testimonio del Exped^{te} se de cuenta al Serenisimo Consejo de Regencia p^a/ que lo traslade al Soverano Congreso Nacional y lo firmaron=El Marq^e de la/ Concordia—Bartolome Arzobispo de Lima—El conde de Vista florida—Jose Vic^{to}/ Ob^o el^{to} de Huamanga—Juan del Pino Manrique—Fran^{co} Xav^r Moreno Escandon—Ma/nuel M^a del Valle—Tomas Ignacio Palomeque—Juan Oyarsabar Juan Bazo/ y Berri—Jose Pareja y Cortes—Mig^l de Eyzaguirre—Pedro de Salduegui—El Mar/ ques de Valde Lirios—Fernando Zambrano —Juan M^a de Galvez—Juan Jose de Leuro/ Joaquin Bonet—El Marq̄ de Torre Tagle—Andres Salazar—Ignacio Mier—Matias/ de Querejasu—Antonio de Elizarde—Man^l Agustin de la Torre—Ant^o Alvarez de/ Villar—Fran^{co} Xabier de Yzque—Antonio Alvarez—Pedro Man^l Bazo—/ Pedro Truxillo—Antonio Isquierdo Martines—Domingo Ant^o de Lainfiesta/ Joaquin Bonet—Secretario— *Lima 16 de noviembre de 1812*—Guardese/ y cumplese lo resuelto en Junta Gen^l de tribunales y en su consequencia / sacandose copias certificadas de esta acta y este Dec^{to} circulense con el correspond^{te} al M R S Arzobispo R R Obispos y Senores Intend^{tes} /de Prov^a p^a los efectos q^e en ella se indican tomandose razon en el R^l tri/ bunal de Ctās. Caxas Matrices y Cont^a Gen^l de tributos y sacandose/ testimonio de este Exped^{te} dese cuenta al serenisimo Consejo de Regencia—/ Concordia—Toribio de Acibal—Es copia que se tomo razon en esta/Caxa Matriz Lima Dic^{re} 4 de 1812.

[10] Dancuart, vol. 1, 1905, pp. 60–61. The particular debate concerned Article 22 of the Constitution then projected, an article excluding the *castas* from civil and political rights in America.

With the abolition of tribute and of the *mita* and with the recognition of the rights and duties of all classes of Colonial population upon a footing of equality, the way was paved toward universal taxation, under the Colonial government and before its collapse.

In 1815 taxes were again levied under the Intendencies from the Indian population (Matraya y Ricci, 1819, vol. 1, p. 519, No. 2979). At this time the offensive term, *tributo de indios*, was replaced by the euphemism *contribución*, which persists in modern usage. It is usually identified with Republican taxation, although it is manifestly a Late Colonial verbal transformation. The subtitle of a pamphlet of 1815 candidly explains the transformation. Composed by an Intendent of the Army, the writing instructs tax collectors upon methods for gathering "that which the Indians are to pay as single tax, in the same amount that they previously satisfied in tribute."[11]

The decree of 1815 restored ordinances and tax rates as of 1808. It brought relief to the 4-year period of fiscal anarchy that had prevailed since the abolition of Indian tribute in 1811. It also equated *única contribución*, as levied upon Indians, with the duties and services performed for the Crown by the Spaniards "and other races" (Leuro, 1815, p. 4).

REPUBLICAN TAXATION, 1826–54

For all its intricate legislative meanders, the underlying pattern of Peruvian taxation from 1826 to 1854 consists of only two themes: (1) the *contribución de indígenas*, a personal tax on Indians, identical in every way with Colonial tribute; and (2) the personal, property, or income tax on non-Indians, generically termed the *contribución de castas*.

In principle the *contribución de castas* extended to all Peruvians the Indian tribute tax of Colonial days, under two functional headings: (*a*) the traditional personal head tax, and (*b*) the new income and property taxes, which exempted the taxpayer from the personal head tax only if equal to or greater than the head tax.

In practice, three distinct taxes applied to the *castas*: (1) *contribución general*, or personal tax, identical to Colonial tribute; (2) property tax and tax on income from property, called *contribución de predios rústicos y urbanos*; (3) *contribución de patentes* (or *gremios*), an income tax on the exercise of a craft.

The term *casta* is a bewildering tangle of fiscal, sociological, and racial concepts. In general Peruvian use it probably signified "non-Indian" and included whites, Negroes, mestizos, and races other than "Indian." Usually, however, the term applies so directly to the mestizo component, as to equate mestizo and *casta*, insofar as "racial" usage is concerned. On the other hand, social class and vocation are implicit in the term. By social class and by vocation, the term *casta* signified the day laborer, the industrial worker, the miner, and the artisan, in a group concept commonly understood today by the term "proletariat" (Dancuart, 1903–1905, vol. 1, pp. 60–61). Here the Indian was excluded by his membership in an agrarian commune, and by his traditional tenure of land. Fiscally, the term *casta* included all individuals not booked upon the Indian tax lists. By fiscal usage all city population, all mobile population, all tenant farmers, and all landowners outside the Indian communes were included. In both "racial" and fiscal usage, the term signified "non-Indian." Among all the "racial," social, and fiscal classes included by the term, the Spaniards and other European immigrants, and the Peruvian "whites" were a small minority.[12] The great majority of the *castas* were also designated as mestizos. In general usage, *casta* was principally but not entirely identical with the term "mestizo." It is therefore permissible to use the three terms interchangeably: *casta*, mestizo, and non-Indian—in the nineteenth-century senses of the words.

THE CONTRIBUCIÓN DE INDÍGENAS

This personal tax on the labor of Indians was essentially a tax on biological existence. Of the early Republican taxes, it was the least subject to

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[11] Leuro, 1815. A copy of this very rare pamphlet is in AHMH. (See Schwab, 1947, No. 1657a.)

[12] Classified figures for the "white" population of Peru are available only for 1795 and 1876:

	Total	*White (number)*	*White (percent)*
1795	1, 076, 173	135, 755	12. 61
1876	2, 699, 945	371, 195	13. 75

In 1940 the figures for whites and mestizos were listed together without distinction. In 1795 and 1876, the great majority of those listed as whites probably enjoyed the classification then as today for economic and geographic reasons. "White" is a caste designation in Peru, relating to economic class and occupation, rather than to biological character.

change. It was regulated and collected according to the Ordinances of 1784. From 1826 to 1854, the rate was occasionally altered, as in 1826 and again in 1829.[13] The methods of accountancy and of ministerial staff organization were in constant flux. Some exemptions were allowed: to males under 18 and over 50; to village officials, church servants, and postmasters. Certain provinces were occasionally exempted (e. g., Huaylas and Santa in 1840) for short periods in reward for exceptional military assistance during the frequent *coups d'état* of the time.[14]

About a quarter of the income of the State came from the *contribución de indígenas* alone.[15] For at least 25 years, the entire operating expenses of the departmental governments were defrayed out of the proceeds from the tax (Oviedo, 1870, vol. 15, p. 2 n; Nos. 59, 60, 117, 124).

The declarations of President Ramón Castilla, upon the abolition of the tax on July 5, 1854, give a measure of the odium in which it had been held. Castilla said that Independence had been an empty name to most Peruvians, chiefly because of the personal tax on Indians. But Providence had now filled the coffers of the State with the extraordinary income from guano exploitation, in such measure as to relieve the deficit of the Treasury.[16]

The *contribución de indígenas* continued nevertheless to be exacted illegally in some provinces. In 1859 Mariano Herencia Zevallos led a rebellion in Cuzco Province with money raised by this means.[17]

THE CONTRIBUCIÓN GENERAL DE CASTAS

Always unpopular, and always failing to produce the expected income, this personal tax on the *castas* became a perpetual political toy. Each new usurper was likely to abolish the tax to gain popular favor. And each new usurper collected the tax surreptitiously until the new form of the old law was again promulgated. For instance, Antonio Gutiérrez de la Fuente, then "Jefe Supremo Provisorio" of the Republic, abolished the *contribución general* on July 18, 1829,[18] but the operations of the tax collectors do not betray their obedience to his orders.

Felipe Santiago Salaverry, the *Jefe Supremo* in 1835, again annulled the *contribución general* on March 20 of that year. In 1839 he abolished it again, after an interlude from power. Salaverry then declared that the tax was odious because it had weighed only "upon miserable persons, whose resources hardly suffice to maintain the bare necessities of life" (Oviedo, 1870, vol. 15, No. 442). Again the tax collectors continued to gather the fraction of the levy that their ingenuity permitted them to extort from the *castas*, although the law of 1839 was not abrogated until the executive decree of 1842.

By a verbal transformation, the same tax continued to be collected under a new, and this time, even less popular name. The decree of 1842 legislated that every Peruvian not classified as an Indian was to be matriculated as a *jornalero* or day laborer, and taxed at the rate of 3 pesos 4 reales annually.[19] The rate split the difference between the extreme rates of the former "personal" tax. By September 23, 1845, the *contribución de industria jornalera*, in turn, was abrogated as illegal and oppressive, this time by the Congreso Constitucional, although collections were currently in progress throughout the Republic.[20]

From the matriculations for all provinces it is clear that the personal tax was collected from non-Indians at all times between 1826 and 1854. The name of the tax varied expediently, and the collections were never an impressive source of revenue,

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[13] The texts of the main decrees bearing upon taxation are printed in Oviedo, 1870, vol. 15, pp. 300–421. Other decrees not known to Oviedo appear throughout the MS. series of papers cataloged under O. L. in AHMH.

On the Bolivian equivalent of the *contribución de indígenas*, see Sotomayor Valdés, 1874, pp. 521 ff.

[14] Oviedo, 1870, vol. 15, Nos. 438, 451. Cf. MS. decrees exempting various towns from tax, AHMH, O. L. 275/29 (Piura towns); O. L. 307/3 (towns in Huamanga Province exempted 1844).

[15] The budget for 1848–49 shows anticipated income of 10,644,846 pesos, of which 2,653,862, or 24.93 percent, were to be collected in *contribuciones de indígenas*. The budget of 1848–49 is said to be the first formal budget prepared in Peru: a printed copy is in AHMH (*Presupuesto General* 1849, O. L. 351/266). (For other figures on annual expenditure and income of the State, see Dancuart, 1903–05, vol. 4, p. 49; vol. 5, p. 51. Cf. Basadre, 1946, vol. 1, p. 280.)

[16] Oviedo, 1870, vol. 15, No. 491. Further bibliography on guano exploitation in Kubler, 1948.

According to Tavara, 1856, table 4, the income of the State from all sources in 1855 was as follows:

	Pesos
Guano	8,610,000
Customs	3,112,056
Taxes	289,979
Miscellaneous	797,964

The revenue from guano alone was more than double the income from all other sources.

[17] Oviedo, 1870, vol. 15, No. 496. On taxation after 1854, see Sánchez Espinosa, 1944.

[18] Oviedo, 1870, vol. 15, No. 402. Broadside of decree: AHMH, O. L. 182/37. Official MS. copy, O. L. 182/24.

[19] Dancuart, 1903, III, p. 54. The text of this *decreto supremo* is lacking in AHMH, and was not printed in any collection of decrees available to Dancuart.

[20] MS. decree. AHMH, O. L. 315/5. Cf. Oviedo, 1870, vol. 15, No. 473, March 16, 1847.

but the non-Indian population was regularly counted and matriculated.

About 1836–40 the term *casta* began to be replaced by other designations. Especially common from 1840 to 1854 was the rubric of *predios e industria.* This shift from a racial designation, to denomination by landed and artisan groups, did not affect the validity of the head count in the later period. All non-Indians continued to be enumerated, often with the designation as *casta*, and as "sin bienes ni industria" if the personal tax could be invoked against the individual who owned no property. In general, the shift from the racial to an occupational classification of non-Indians did not greatly lessen the value of the tax registers as demographic sources.

CONTRIBUCIÓN DE PREDIOS E INDUSTRIA

It has just been seen that this tax was originally an alternate category in the taxation of non-Indians, directed at the landowners and wage laborers. Until about 1840 the registers of these taxpayers were included in the general *matrículas de castas.* Then, to counter the opposition aroused by the personal tax on non-Indians, and with the verbal transformations of the personal tax, the *contribución de predios e industria* became the rubric under which the head count of all non-Indian inhabitants of Peru was conducted. A glance at table 1 shows the relationship between the registers of *castas*, and the registers of *predios e industria.* The latter are numerous only after 1840; the former appear in numbers before 1840. Both served the same function; both are essentially identical, in that they enumerate non-Indian population, less for the hopeless task of collecting revenue, than for maintaining some census of the non-Indian inhabitants.

THE CONTRIBUCIÓN DE PATENTES

We pointed out in the section on the fiscal aspects of Early Republican taxation, that the levies upon the artisans were ineffective everywhere but in Lima and the largest cities. The Archivo Histórico nevertheless contains many registers of this sort for cities of various sizes. These registers give the numbers, the professional ratings, and the annual estimated incomes of the various guilds of craftsmen and professional people. As stated in the Preface, the detailed study of such registers is not embraced by the scope of the present work. It may be noted here, however, that on March 3, 1835, the *contribución de patentes* was abolished without substitute, until June of the same year, when it was restored under the guise of the *alcabala de gremios*, or guild tax, whereby the individual craftsmen were taxed indirectly through their professional organizations.[21]

The registers of all periods clearly show that prosperous craftsmen in the cities preferred to be listed as indigents, under the personal tax, rather than as liable for the tax of 4 percent on income from the exercise of a craft. Thus in Cotabambas Province in 1830:[22] among 1,472 taxpayers, only 169 were declared as property owners and craftsmen. In Huamalíes Province in 1841,[23] only 116 individuals among 2,942 taxpayers declared themselves as possessing lucrative occupation. All others were listed as "sin bienes ni industria," and as paying only the personal tax, then 3 pesos annually. Even with these limitations the registers are valuable sources for the economic history of Peru. For instance, in the Villa of Abancay in 1836,[24] the following occupations are listed: Seven landowners, five estate managers, four muledrivers, four storekeepers, one silversmith, one tailor, and one blacksmith. The figures indicate only the professionals whose entire activity was patently given to a specialty. The figures take no account of the innumerable part-time craftsmen who compose the characteristic urban population of home industries in present-day Peru, and who surely composed it also in the nineteenth century.

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[21] MS. decree. AHMH, O. L. 237/36. Serra reviewed the course of this tax to 1831 in his succinct "Memorias" (MS., AHMH, Q. L. 216/367).

[22] MS., "Matricula de Castas de la Provincia de Cotabambas, Departamento del Cuzco," AHMH, R. 0104. 130 fos.

Cf. the unsigned account, probably based upon an *informe* written by a tax collector, published in *Minerva del Cuzco*, January 28, 1832, vol. 30, No. 22: "La contribución de castas se hace dificil. Los blancos tienen repugnancia por ella; al contrario los indígenas son puntuales. Los primeros prefieren enrrolarse en el ejército para eximirse de pagar la contribución." Note the identification of *castas* and *blancos*, which amounts to an identification of mestizo with white in one caste.

[23] MS., "Matricula de Castas y acotacion de Patentes e Industria de la Provincia de Huamalies, Dep. de Junin," AHMH, R. 0265. 523 pp.

[24] MS., "Matricula de predios e industriales de la Provª de Abancay actuada en el año de 1836," AHMH, R. 0195. 9 fos.

TABLE 1.—*Peruvian tax registers to 1854, classified by levy, year, and province* [1]

Provinces	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854
Abancay		/				\									\						✳						\	|		
Andahuaylas		/										×					×													
Anta		/				\															✳						|			
Arequipa				\																								|		
Arica			/																											
Aimaraes		/																									/			
Asángaro		\									×																			
Cailloma																			×					|						
Cajamarca		/																					\							
Cajatambo																						|								
Calca [2]						/						\									✳						\			
Callao																														
Camaná				\																										
Canas																					/									
Canchis																														
Cañete																														
Canta																														
Carabaya		\				×				/																\				
Castrovirreyna						\						\					\					\								
Cerro de Pasco																														
Chachapoyas													/																	
Chancay												/												×						
Chota							/							\																
Chucuito																													\	
Chumbivilcas						\																								
Conchucos Bajo						/																|								
Condesuyos																														
Cotabambas		\				\	/				\																			
Cuzco																														
Huamachuco		\																												
Huamalíes						×											×					|						\		
Huamanga						×																								
Huancané		/				×																				*				
Huancavelica			\			/																								
Huánuco		/		×		\																								
Huari												/							/			×								
Huarochiri																												\		
Huaylas						\						×				|	\				\	|		\						
Ica						×										\														
Jaén													\					\							\					
Jauja											×										*	\						|		
Lampa													\																	
Lima																								\						
Lucanas						×																								
Luya																														
Moquegua																														
Parinacochas		\										\										×					/			
Paruro						\						/									|									
Pataz							/				/		\					\					\							
Paucartambo	/					/															\					/				
Quispicanchis		×				×					\	|															|			
Santa		\											/				\							\						×
Tacna						/																								
Tarapacá																×					×									
Tayacaja		/				/											\					\								
Trujillo																												|		
Unión		\				/															/	\								
Urubamba		×				×											|					|						*		
Yauyos		/										\																		

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[1] /=*castas*; \=*indígenas*; |=*predios e industria;* × =*castas* and *indígenas;* ✳ =*indígenas* and *predios e industria.*

[2] In 1951 when this report was already in press the writer encountered the following volume in the conventual archive of San Francisco in Cuzco: "Matrícula de Indíos de Calca del Año de 1820."

THE WORKING FIGURES, 1795–1940

The evidence is of two classes. The official and unofficial census reports compose the body of published materials, which must be rearranged to show population changes for uniform areas. In the census reports now known, the provincial units of territory for which the populations are listed, were in constant change. The changes always divide an increasing population into smaller provinces. By reference to legislation on provincial boundaries, as compiled by Tarazona (1946), it is possible to establish uniform and comparable territorial units for any spread of time within our scope. These territorial comparisons are presented in the maps of the next chapter. Here the raw materials of the actual census reports, insofar as they cite the numbers composing each caste, are reduced as much as possible to tables based on constant territorial units.

The other class of evidence consists of the unpublished tax reports from the period 1826–54. These tax reports, when prepared for demographic study, yield knowledge that was heretofore lacking on population changes between 1795 and the official census of 1876. The tax reports themselves are far too cumbersome for reproduction. Instead, abstracts by Indian and non-Indian castes in the various districts of each province have been prepared. Table 2 presents these comparative digests, which all are scaled to the provincial boundaries of the period 1826–54. For purposes of generalization, the information from the census of 1876, as well as the census of 1940, is also tabulated, again in respect to the provincial boundaries of the period 1826 to 1854. It did not seem appropriate to base these territorial units upon the provincial divisions of 1795, for the census of 1795 is better used as a comparison to 1826/54 than as a point of departure. The census of 1795 merely gives provincial totals, without district subtotals. The tax reports of 1826–54, on the other hand, are arranged by districts, which allows their comparison with the later reports of 1876 and 1940. In theory the maps might have been based upon provincial units as of 1940, were it not that so many district boundaries are of undetermined extent prior to 1876.

Table 3 shows further elaborations of the evidence. Table 2 represents the extended digest of tax-record information, scaled to uniform territories, and carried from 1826/54 to 1940. Table 3 carries the analysis of the material a step further, by giving percentages in the composition of the population of an area at various moments, and by incorporating numerous bits of information drawn from published census reports and from occasional newspaper articles of the period.

PROVINCIAL CASTE TOTALS (1826/54–1940) ARRANGED BY TERRITORIAL UNITS AS OF 1826/54 (TABLE 2)

The tax collectors were frequently men of limited education. Their additions are usually incorrect, both in district subtotals, and in provincial totals. Their difficulties were compounded by the official requirement that they subtract from the total population the old and infirm people exempted by law from the payment of taxes. Hence the tabulated totals often differ widely from the totals as added by the tax collectors in the summary pages at the end of each *matrícula*. We have here distinguished between the "added total," as calculated by machine, and the total recorded as "text total" and given by the collector. Of the two, the "added total" is more nearly correct, for it represents the actual head count, rather than the collector's estimate of taxable individuals. The absence of a text total means that none is available.

Immediately beneath the date at the head of each column, unless otherwise noted, is the catalog number at the Archivo Histórico of each item abstracted. Under the columns for 1876 and 1940, the reference is always to the complete published figures for these years. In the case of the census of 1876, it is to the relevant section of the seven-volume *Censo General;* and in the case of 1940, it is to the appropriate section of the eight-volume *Censo Nacional.*

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*

ABANCAY

District	1826		1830		1839		1845		1851		1876		1940	
	Indians	R.0044; R.0045 Others	R.0102 Indians	Others	R.0237 Indians	Others	R.0310 Indians	R.0311 Others	R.0417 Indians	R.0633 Others	Indians	Others	Indians	Others
Abancay		785	352				505	365	607	339	1,891	2,894	6,013	5,945
Huanipaca		413	245				334	330	402	362			1,683	951
Cachora		267	682				1,043	72	1,173	84				
Antilla		94	356				455	96	484	107				
Curahuasi		568	399				386	165	393	147	2,427	2,533	8,080	2,003
Tairoma			200				208		248					
Lambrama		105			1,946		2,188	113	2,274	122	2,017	319	3,572	515
Caipe		48												
Circa		222			1,670			302	1,326	270	980	911	1,777	1,743
Huirahuacho		68												
Chacochi		43												
Pichirhua		195									911	1,596	2,903	1,157
Casinchihua		82												
Chalhuani		253					531	153	380	114				
Cotarma		37			280									
Choñabamba		17												
Lucuchanga		133					290	36	242	52				
Luychubamba and Saracata.		20												
Mosobamba		21												
San Juan Colpa		99					563	61	551	67				
Larata		98												
Added total		3,568	[1] 6,130				6,503	1,693	8,080	1,664	8,226	8,223	24,028	12,094
Text total			-----				6,570	1,706	8,232	1,665				

[1] Both R.0102 and R.0237 are incomplete reports. When added together, they yield a complete provincial report on Indian population 1830–39.

ANDAHUAYLAS

District	1826		1836		1841		1876		1940	
	R.0041 Indians	Others	R.0180 Indians	R.0196 Others	R.0267 Indians	R.0266 Others	Indians	Others	Indians	Others
Andahuaylas		1,040	1,766	433	2,089	495	2,326	2,202	10,049	3,295
Talavera		1,608	995	905	1,527	1,966	1,718	2,575	10,272	5,343
San Gerónimo		1,672	1,837	1,231	6,007	1,798	4,612	3,702	15,540	1,969
Huancarama		1,472	1,767	1,001	2,311	1,602	2,861	2,903	11,635	1,983
Pampachiri		733	1,174	446	5,320	653	3,134	1,549	6,366	812
Huayana		433	590	274	819	602				
Cachi		356	651	297	882	468			2,262	869
Huancaray		1,395	1,829	666	2,187	1,308	3,266	2,809	4,433	694
Chincheros		1,208	975	504	1,316	744	3,380	4,100	6,575	1,383
Cocharcas			894	714	1,082	1,000			2,194	2,071
Ongoy		1,417	974	442	1,235	683	2,824	186	7,691	988
Ocobamba			1,447	1,038	1,830	1,493	2,046	1,907	6,870	1,858
Chiara									2,402	172
Added total		11,334	14,899	7,951	26,605	12,812	26,167	21,933	86,289	21,437
Text total					18,926	12,201	26,167	21,933	86,289	21,437

ANTA

District	1826		1830		1845		1851		1876		1940	
	Indians	R.0044 Others	R.0102 Indians	Others	R.0373 Indians	R.0312 Others	Indians	R.0647 Others	Indians	Others	Indians	Others
Mollepata		437	260		340	624		721	3,498	2,722	1,232	2,625
Limatambo		391	1,127		1,268	288		334			3,961	3,141
Chuyani Chonta		57	410		443							
Pivil		205	196		215	376		479				
Pantipata		52	762		988							
Chinchaypuquio		229	482		601	485		515				
Anta		402	3,851		4,785	463		732	5,887	2,224	12,723	3,536
Pucyura		182	1,266		1,422	182		351				
Huarocondo		184	2,515		3,004	226		312			4,642	930
Surite		466	3,647		4,338	379		630	5,907	1,430	5,239	1,348
Sumaro			296		343							
Poroy			177		200							
Ecclesiastics						7		12				
Added total		2,605	14,989		17,947	3,030		4,086	15,292	6,376	27,797	11,580
Text total					17,947			4,285			27,797	11,580

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

AREQUIPA

District	1828		1876		1940	
	R.0068 Indians	Others	Indians	Others	Indians	Others
Yanahuara	1, 412	----------	2, 099	4, 280	642	4, 416
Cayma	677	----------	773	3, 306	1, 046	6, 788
Tiabaya	575	----------	544	3, 010	449	2, 926
Paucarpata	667	----------	293	3, 135	480	2, 435
Characato	458	----------	781	2, 022	122	2, 318
Pocsi	3, 119	----------	1, 595	1, 695	953	1, 872
Chiguata	989	----------	791	1, 564	1, 178	1, 986
Added total	7, 897	----------	6, 876	19, 012	4, 870	21, 741
Text total	----------	----------	----------	----------	----------	----------

ASANGARO

District	1826		1835		1876		1940	
	R.0059; R.0058 Indians	Others	R.0183 Indians	R.0184 Others	Indians	Others	Indians	Others
Asángaro (*olim* Vilca Apasa)	3, 870	----------	4, 043	185	8, 069	682	17, 407	1, 095
San Juan de Salinas	744	----------	872	----------	----------	----------	1, 856	90
Urinsaya (part of Asángaro)	1, 313	----------	1, 385	----------	----------	----------	----------	----------
Muñani	1, 970	----------	1, 997	112	2, 420	252	4, 749	192
Poto	550	----------	533	87	691	66	722	199
Putina	4, 336	----------	4, 163	292	3, 435	418	6, 986	552
Chupa	2, 401	----------	2, 309	166	3, 195	146	9, 047	339
Arapa	1, 526	----------	1, 775	78	3, 700	130	8, 989	521
Villa de Betanzos	804	----------	889	3	----------	----------	----------	----------
Samán	3, 234	----------	3, 352	82	4, 442	94	8, 477	224
Taraco	3, 297	----------	----------	148	3, 940	106	8, 748	226
Pusi	936	----------	----------	103	2, 052	76	4, 058	335
Caminaca	944	----------	----------	92	1, 905	53	3, 438	27
Achaya	1, 361	----------	----------	8	1, 830	59	2, 878	26
Santiago de Pupuja	4, 321	----------	----------	125	4, 325	100	8, 245	375
Asillo	4, 541	----------	----------	271	5, 689	397	11, 987	464
San José (Llaulli)	1, 893	----------	----------	76	1, 853	95	3, 669	63
San Antón (Huanacomayo)	1, 735	----------	----------	38	1, 560	89	3, 312	120
Potoni	1, 059	----------	----------	34	1, 287	113	1, 805	105
Added total	40, 835	----------	(2)	1, 880	50, 393	2, 876	106, 373	4, 953
Text total	----------	----------	----------	1, 822	----------	----------	----------	----------

[2] Incomplete.

AIMARAES

District	1826		1851		1876		1940	
	Indians	R.0045 Others	Indians	R. 0629 Others	Indians	Others	Indians	Others
Chalhuanca	----------	1, 162	----------	1, 151	3, 100	2, 115	3, 781	2, 990
Pampamarca (Cotaruse)	----------	115	----------	356	----------	----------	3, 073	635
Ancobamba (Chapimarca)	----------	178	----------	605	1, 176	908	2, 615	664
Tapairihua	----------	631	----------	1, 032	860	2, 676	2, 015	4, 475
Sarayca	----------	518	----------	716	----------	----------	----------	----------
Soraya (including Toraya)	----------	869	----------	1, 122	928	2, 804	2, 680	4, 973
Colcabamba	----------	1, 263	----------	971	991	2, 628	4, 525	3, 995
Mollebamba	----------	333	----------	424	----------	----------	----------	----------
Antabamba	----------	619	----------	626	1, 187	1, 967	2, 768	2, 960
Huaquirca	----------	309	----------	377	----------	----------	----------	----------
Sabaino	----------	159	----------	508	827	987	1, 707	1, 640
Oropesa	----------	287	----------	432	1, 046	188	1, 949	493
Pachaconas	----------	414	----------	533	328	614	1, 188	958
Ecclesiastics	----------	----------	----------	14	----------	----------	----------	----------
Added total	----------	6, 857	----------	8, 867	10, 443	14, 887	26, 301	23, 783
Text total	----------	----------	----------	8, 897	10, 443	14, 887	26, 301	23, 783

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

CAILLOMA

District	1843		1848		1876		1940	
	R.0284 Indians	R.0286 Others	Indians	R.0370 Others	Indians	Others	Indians	Others
Cailloma	1,564	147	------	163	2,180	256	2,676	576
Tisco	1,909	15	------	17	1,492	28	1,382	67
Callalli	1,540	41	------	55	1,209	26	1,766	22
Sibayo	614	------	------	7	------	------	1,450	77
Tuti	491	------	------	------	1,099	4	------	------
Chivay	949	48	------	70	1,059	252	2,322	627
Canucota	182	------	------	------	------	------	------	------
Coporaque	787	10	------	15	645	18	753	96
Yanque	1,876	86	------	103	1,448	170	1,989	541
Achoma	919	23	------	31	698	35	1,056	139
Maca	896	36	------	42	548	50	682	59
Ichupampa	660	------	------	------	408	73	623	69
Lari	884	32	------	46	747	23	989	25
Madrigal	799	------	------	------	560	20	614	77
Tapay	1,413	47	------	70	1,427	82	1,340	240
Cabanaconde	1,388	328	------	383	2,109	416	2,238	722
Pinchollo	465	------	------	------	------	------	------	------
Huambo	785	------	------	------	------	------	765	183
Lluta	220	116	------	120	848	89	439	902
Taya	174	------	------	------	------	------	------	------
Huanca	513	------	------	------	------	------	1,172	856
Murco	141	------	------	------	------	------	------	------
Yura	182	219	------	448	195	637	255	775
Sihuas	85	1,031	------	1,198	124	1,245	223	1,423
Added total	19,436	2,179	------	2,768	16,796	3,424	22,734	7,476
Text total	19,343	------	------	2,699	------	------	------	------

CAJAMARCA

District	1826		1847		1876		1940	
	Indians	R.0052 Others	R.0359 Indians	Others	Indians	Others	Indians	Others
Cajamarca	------	2,672	6,678	------	8,064	7,070	21,634	16,234
Llacanora	------	------	------	------	1,112	99	2,526	507
Encañada	------	410	825	------	1,491	1,397	5,262	4,488
Namora	------	------	------	------	------	------	334	3,658
Jesús	------	1,313	2,333	------	2,021	3,253	1,521	7,397
San Pablo	------	1,425	2,589	------	3,177	4,467	2,367	9,003
Magdalena	------	144	------	------	724	139	183	846
San Juan	------	------	------	------	------	------	534	1,567
Asunción	------	1,592	2,274	------	1,482	2,761	29	5,949
Cospán	------	------	------	------	1,539	1,755	205	5,032
San Marcos	------	2,608	738	------	982	6,160	709	18,772
Ichocán	------	1,987	295	------	426	4,292	8	8,176
Matara	------	------	------	------	270	1,306	493	2,314
Contumasá	------	2,198	433	------	518	5,194	------	------
Provincial total	------	------	------	------	------	------	219	27,649
Trinidad	------	258	550	------	810	1,063	------	------
Guzmango	------	260	1,054	------	1,436	1,082	------	------
Cascas	------	567	329	------	356	2,918	------	------
Celendín	------	3,732	1,468	------	------	------	------	------
Provincial total	------	------	------	------	1,802	11,800	630	39,295
Sorochuco	------	680	626	------	------	------	------	------
Chetilla	------	------	1,687	------	1,520	52	2,887	435
Ecclesiastics	------	32	------	------	------	------	------	------
Added total	------	19,878	21,879	------	27,730	54,808	39,541	151,322
Text total	------	------	23,426	------	27,730	54,808	39,541	151,322

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

CAJATAMBO

District	1838		1876		1940	
	Indians	R. 0346 Others	Indians	Others	Indians	Others
Provincia de Cajatambo		1, 839				
Cochamarca			768	25	1, 394	101
Huasta			828	831	1, 410	1, 360
Acas			870	33	1, 228	317
Aquia			625	782	1, 308	1, 408
Chiquián			1, 150	987	1, 161	2, 383
Distrito de Cajatambo		1, 144	1, 499	1, 313	1, 264	3, 206
Ticllos		313	1, 908	528	1, 088	832
Cajamarquilla					1, 213	394
Gorgor		1, 468	436	1, 618	499	2, 132
Huancapón			858	278	951	876
Manás					835	357
Mangas		191	1, 794	1	825	275
Pacllón			1, 045	98	986	180
Ocros		997	1, 082	1, 140	1, 821	2, 816
Copa					393	660
Cajacay		1, 000	973	785	1, 259	1, 781
Huaillacayán			1, 190	255	909	994
Cochas		242	131	244	158	769
Andajes		631	477	388	1, 021	372
Caujul			693	361	588	1, 231
Oyón			2, 238	632	3, 927	1, 403
Pachangará			1, 149	155	486	1, 363
Churín		1, 103				
Ambar		485	685	182	1, 205	1, 168
Added total		9, 413	20, 399	10, 636	25, 029	26, 378
Text total		9, 240				

CALCA

District	1830		1836		1845		1851		1876		1940	
	Indians	R.0103 Others	R.0198 Indians	Others	R.0316 Indians	R.0317 Others	R.0418 Indians	Others	Indians	Others	Indians	Others
Calca		178	2, 191		2, 385	232	2, 468		5, 353	1, 523	7, 842	5, 113
Lamay		67	1, 427		1, 408	149	1, 438					
Chuquibamba		45										
Coya		24	1, 047		1, 104	98	1, 223					
Chinchero		16	2, 701		3, 037	6	3, 034					
Umasbamba			826		907		909					
Pisac		75	2, 166		2, 462	168	2, 645		3, 685	789	9, 644	1, 513
Taray		49	903		1, 148	124	1, 277					
San Salvador			1, 551		1, 711	193	1, 801					
Lares		443	3, 660		2, 676	591	2, 691		1, 979	757	5, 704	3, 962
Ecclesiastics		9				11						
Added total		906	16, 472		16, 838	1, 572	17, 486		11, 017	3, 069	23, 190	10, 588
Text total			14, 565		16, 853	1, 572	17, 394		11, 017	3, 069	23, 190	10, 588

CANAS

District	1845		1876		1940	
	Indians	R.0317 Others	Indians	Others	Indians	Others
Yanaoca		24	3, 403	298	6, 678	560
Checca		55	3, 435	221	4, 782	234
Layo		31	1, 908	249	3, 894	209
Pampamarca					3, 521	1, 074
Quehue					1, 930	107
Langui		63	2, 491	557	2, 996	954
Pichigua		49	2, 999	252	3, 764	324
Pallpata					2, 056	115
Coporaque		23	7, 946	213	10, 153	157
Yauri (Espinar)		44	10, 607	316	11, 806	658
Condoroma		15			784	102
Ocoruro			931	40	1, 290	116
Ecclesiastics		12				
Added total		316	33, 720	2, 146	53, 654	4, 610
Text total						

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

CANTA

District	1813		1876		1940	
	Archivo Arzobispal, Lima		Indians	Others	Indians	Others
	Indians	Others				
Atavillos Alto	851	65	1, 345	250	1, 153	1, 086
Atavillos Bajo	1, 222	18	1, 751	17	779	1, 460
Canta	974	575	2, 389	523	1, 313	3, 860
Huamantanga	1, 982	861	3, 544	446	1, 006	3, 289
Sumbilca	----------	----------	----------	----------	1, 549	1, 195
Lampián	661	400	1, 697	59	694	1, 937
Pari-Pacaraos	744	116	1, 676	10	1, 236	1, 837
Arahuay	----------	----------	1, 257	152	945	1, 950
San Buenaventura	579	385	1, 319	215	1, 076	1, 600
Added total	7, 013	2, 420	14, 978	1, 672	9, 751	18, 214
Text total	----------	----------	----------	----------	9, 751	18, 214

CARABAYA

District	1826		1830		1834		1850		1876		1940	
	R.0056 Indians	Others	R.0119 Indians	R.0120 Others	Indians	R.0169 Others	R.0404 Indians	Others	Indians	Others	Indians	Others
Sandia	5, 494	----------	4, 808	284	----------	423	2, 876	----------	3, 889	863	10, 259	1, 524
Patambuco	----------	----------	----------	107	----------	140	1, 286	----------	1, 285	278	2, 267	463
Quiaca	846	----------	771	29	----------	50	529	----------	734	82	1, 192	168
Sina	----------	----------	----------	65	----------	120	479	----------	569	207	608	260
Phara	1, 376	----------	1, 318	128	----------	174	1, 573	----------	1, 490	315	1, 861	305
Crucero	----------	----------	----------	44	----------	82	1, 243	----------	996	134	1, 855	223
Coasa	3, 959	----------	3, 836	92	----------	126	1, 839	----------	1, 553	194	2, 776	979
Usicayos	----------	----------	----------	39	----------	42	986	----------	743	58	1, 700	196
Ayapata	3, 754	----------	4, 021	152	----------	310	2, 320	----------	1, 785	373	2, 375	578
Ajoyani	----------	----------	----------	10	----------	8	369	----------	282	78	646	59
Macusani	2, 598	----------	2, 600	140	----------	185	1, 271	----------	1, 180	279	2, 537	443
Ituata	----------	----------	----------	26	----------	54	1, 931	----------	1, 516	77	1, 914	366
Corani	----------	----------	----------	66	----------	76	1, 000	----------	897	77	1, 866	237
Ollachea	----------	----------	----------	15	----------	52	974	----------	904	95	1, 769	390
Cuyo-Cuyo	----------	----------	----------	----------	----------	----------	1, 866	----------	2, 206	46	2, 866	214
Added total	18, 027	----------	17, 354	1, 197	----------	1, 842	20, 542	----------	20, 029	3, 156	36, 491	6, 405
Text total	----------	----------	----------	----------	----------	----------	20, 652	----------	----------	----------	----------	----------

CASTROVIRREYNA

District	1830		1836		1841		1846		1876		1940	
	R.0093 Indians	Others	R.0204 Indians	Others	R.0260 Indians	Others	R.0350 Indians	Others	Indians	Others	Indians	Others
Castrovirreyna	966	----------	957	----------	817	----------	949	----------	1, 183	53	1, 568	948
Huachos (and Cocas)	690	----------	757	----------	759	----------	882	----------	1, 279	----------	2, 898	3, 837
Arma (and Tantará)	830	----------	878	----------	896	----------	902	----------	1, 633	----------	1, 688	1, 963
Chavín	1, 282	----------	1, 304	----------	1, 316	----------	1, 370	----------	1, 493	----------	2, 682	509
Huangáscar	834	----------	881	----------	897	----------	958	----------	1, 231	2	1, 022	1, 821
Huaitará (and Tambo)	1, 038	----------	1, 089	----------	1, 098	----------	1, 370	----------	913	32	3, 781	2, 613
Santiago de Chocorvos	1, 597	----------	1, 631	----------	1, 663	----------	1, 762	----------	2, 227	4	5, 224	1, 976
Cordova (and Ocoyo)	1, 656	----------	1, 491	----------	1, 564	----------	2, 057	----------	3, 270	----------	4, 815	3, 455
Pilpichaca	1, 177	----------	1, 176	----------	1, 286	----------	1, 394	----------	1, 457	25	3, 274	243
Aurahuá and Ticrapo	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	1, 358	1, 699
Added total	10, 070	----------	10, 164	----------	10, 296	----------	11, 644	----------	14, 686	116	28, 310	19, 064
Text total	10, 019	----------	10, 144	----------	10, 286	----------	11, 654	----------	----------	----------	----------	----------

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

CHACHAPOYAS

District	1837–38		1876		1940	
	Indians	R.0211 Others	Indians	Others	Indians	Others
Chachapoyas, Provincial total			7, 725	9, 169	8, 775	11, 943
Chachapoyas, City		2, 055				
Leimebamba		200				
Chuquibamba		35				
Balsas		96				
Jalca		45				
Levanto		69				
Olleros		410				
Vituya		18				
Rodríguez de Mendoza, Provincial total					69	8, 223
Huayabamba		1, 644				
Bongará, Provincial total			2, 882	462	2, 516	4, 595
Chisquilla		60				
San Carlos		238				
Olto		250				
Luya, Provincial total			7, 594	6, 452	1, 906	27, 038
Hatun Luya		610				
Ocallí		586				
Pisuquia		275				
Santo Tomas		554				
Bagua Grande		587				
Bagua Chica		31				
Yamón		658				
Added total		8, 421	18, 201	16, 083	13, 266	51, 799
Text totals						

CHANCAY

District	1936		1848 Bibl. Nac., Lima		1876		1940	
	Indians	R.0205 Others	Indians	Others	Indians	Others	Indians	Others
Pativilca				205	436	2, 758	1, 346	9, 399
Barranca		237	521	260	1, 165	1, 324	2, 427	4, 062
Supe		632	525	409	958	1, 594	1, 513	5, 957
Huaura		1, 090	296	234	720	2, 488	2, 505	5, 774
Huacho		190	4, 763	161	7, 661	1, 656	9, 792	16, 683
Sayán		632	160	188	552	1, 636	1, 535	2, 727
Checras		851	1, 203	938	1, 358	1, 308	2, 733	1, 698
Racche			1, 291	544				
Ihuarí		41	1, 297	62	1, 421	158	2, 507	384
Chancay		388	432	380	1, 300	3, 442	3, 083	20, 044
Aucallama			24	50	234	1, 613		
Paccho		606			2, 098	560	3, 193	948
Added total		4, 667	10, 512	3, 431	17, 903	18, 537	30, 634	98, 310
Text totals		5, 585	10, 512	3, 431				

CHOTA

District	1831		1838		1876		1940	
	Indians	R.0139; R.0140 Others	R.0228 Indians	R.0228 Others	Indians	Others	Indians	Others
Chota, Provincial total					15, 595	35, 421	2, 436	92, 548
Chota		5. 909	4, 014					
Tacabamba		2, 756	1, 010					
Pion		156	777					
Cachen		1, 523	978					
Huambos		3, 105	2, 274					
Hualgayoc, Provincial total					15, 814	31, 484	5, 292	88, 866
Santa Cruz		1, 410	1, 797					
Niepos		767	942					
San Miguel		2, 420	2, 382					
Hualgayoc		3, 846	302					
Bambamarca		2, 155	2, 271					
Cutervo		2, 405	2, 688				301	18, 484
Socota							44	6, 218
Llama		1, 053	337					
Added total		27, 505	19, 772		31, 409	66, 905	8, 073	206, 116
Text total			19, 859	33, 916				

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

CHUCUITO

District	1826		1853		1876		1940	
	RR. EE. 5–7 Indians	Others	R.0440 Indians	Others	Indians	Others	Indians	Others
Chucuito			7,313		6,689	192	14,845	262
Asunción	1,819							
Santo Domingo	3,282							
Pichacani	1,680		2,019		1,899	130	3,108	181
Acora			10,039		7,738	451	25,709	919
San Juan	3,103							
San Pedro	5,230							
Ilave			10,941		10,749	315	28,966	962
San Miguel	3,681							
Santa Barbara	3,791							
Santa Rosa			1,470		1,426	107	2,911	234
Huacullani			2,100		1,890	58	3,555	182
Juli			4,590		5,534	407	15,467	1,016
Sales			1,964					
Pomata			4,970		3,441	271	12,577	917
Zepita			3,934		7,965	247	17,016	783
San Pedro			5,388					
Desaguadero			1,877		809	128	2,182	295
Pisacoma			1,903		1,148	37	2,564	210
Yunguyo					7,221	600	18,855	1,446
Asunción			4,991					
Magdalena			3,769					
Added total	22,586		67,268		56,509	2,943	147,755	7,407
Text total	(2)		66,729					

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[2] Incomplete.

CHUMBIVILCAS

District	1830		1876		1940	
	R.0105 Indians	Others	Indians	Others	Indians	Others
Velille	1,849		1,148	416	4,283	634
Livitaca	3,775				5,010	2,279
Chamaca	1,182		1,611	94	3,407	732
Ccapacmarca	207		786	408	2,181	1,289
Colquemarca	1,829		5,764	250	5,936	1,391
Llusco	1,375		6,259	392	5,474	1,098
Santo Tomás	1,091				10,489	1,262
Hanccoyo Condes	786					
Alca	1,733		5,321	1,542	1,890	1,182
Tomepampa	419		298	636	549	762
Cotahuasi	735		1,071	1,887	1,318	2,035
Toro	408		495	1,011	950	754
Added total	15,389		22,753	6,636	41,487	13,418
Text totals	16,952					

CONCHUCOS

District	1830		1876		1940	
	Indians	R.0112 Others	Indians	Others	Indians	Others
Piscobamba		6,490	6,708	8,647	13,563	5,093
Pomabamba		3,839	3,347	6,772	14,246	5,188
Sihuas		2,330	3,287	6,320	8,470	8,632
Pallasca		1,844	3,317	3,968	6,571	7,306
Cabana		1,136	672	3,055	948	5,562
Tauca		1,262	451	2,690	1,761	2,099
Llapo		955	185	2,306	532	3,377
Corongo		1,816	2,391	3,590	2,295	6,299
Parobamba			3,964	3,896	6,677	3,359
Added totals		19,672	24,322	41,244	55,063	46,915
Text total		20,165				

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

COTABAMBAS

District	1826		1831	1830	1835		1876		1940	
	R.0047 Indians	Others	R.0084 Indians	R.0104 Others	R.0203 Indians	Others	Indians	Others	Indians	Others
Cotabambas							2,933	1,312	6,502	2,771
San Juan Totora	1,173		1,044	295	1,135					
Ccoyllurqui	769		849	511	883					
Pituanca	609		643	306	571					
Huaillati	2,217		2,568	1,196	2,619		2,757	915	4,958	5,149
Ayrihuanca	830		986	911	1,009					
Chuquibambilla	685		931	943	963		1,766	2,992	7,120	4,005
Mamara	1,106		1,373	385	1,286		3,055	709	5,285	2,853
Haquira	2,174		734	371	750		2,349	300	6,460	1,161
Llacgua	1,317		1,390	228	1,257					
Mara	2,175		2,069	450	1,523		3,583	1,247	6,679	1,743
Pitec	431		452	132	435					
Palcaro	1,206		944	353	787					
Tambobamba	1,191		1,317	248	1,367		3,402	1,326	7,099	2,397
Churoc	464		428	36	376					
Added total	16,348		15,728	6,365	14,961		19,845	8,801	44,103	20,079
Text total	14,059		15,614	6,365	15,021		19,845	8,801	44,103	20,079

HUAMACHUCO

District	1826		1876		1940	
	R.0054 Indians	Others	Indians	Others	Indians	Others
Huamachuco	4,495		7,189	8,044	3,974	11,976
Sarín					5,021	8,293
Sanagorán					1,578	5,128
Sartimbamba	6,936		704	2,811	3,577	3,173
Marcabal	2,396		1,343	1,269	1,658	2,468
Cajabamba, Provincial total					4,370	34,582
Cajabamba	3,328		8,501	10,667		
Amarcucho	1,607		1,603	1,388		
Added total	18,762		19,340	24,179	20,178	65,620
Text total						

HUAMALIES

District	1830		1841		1846		1852		1876		1940	
	R.0113 Indians	R.0113 Others	R.0262 Indians	R.0265 Others	Indians	R.0347 Others	R.0637 Indians	Others	Indians	Others	Indians	Others
Huamalíes, Provincial total											19,877	13,972
Huacrachuco	127	1,303	160	1,772		2,116	359		3,034	1,437		
Arancay	160	307	194	454		610	333		233	990		
Chavín de Pariarca	768	1,314	949	1,909		1,969	1,371		1,797	3,001		
Llata	1,394	868	1,700	1,084		1,203	2,142		3,104	1,675		
Singa	259	801	387	1,190		1,128	637		729	2,192		
Chuquibamba												
Dos de Mayo, Provincial total											42,483	18,405
Baños	1,657	855	2,139	1,127		1,142	2,653		3,937	1,641		
Jesús	852	283	1,010	368		347	1,245		2,272	455		
Pachas	1,657	1,597	4,174	2,467		2,738	5,256		1,606	1,833		
Obas		92							5,113	2,494		
Marañón, Provincial total											14,375	5,960
Huacaibamba	161	1,571	247	2,262		3,073	531		1,618	5,219		
Ecclesiastics		30										
Added total	8,768	9,121	10,960	12,583		14,326	14,527		23,443	20,937	76,735	38,337
Text total	8,768	9,121	11,047	12,637			14,537					

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

HUAMANGA

District	1830		1876		1940	
	R.0096 Indians	R.0094 Others	Indians	Others	Indians	Others
Carmen Alto					690	66
Quinua	4,293	514	3,124	355	4,730	919
Tambillo	3,247	47	4,037	56	5,798	603
Chiara	927	16	1,636	59	2,751	614
Santiago de Pischa	2,326	71	3,260	355	5,515	643
Socos Vinchos			4,639	96	11,448	1,771
Cachi Vinchos	2,317	86				
Acos Vinchos			2,939	365	5,494	583
Chungui	1,414	421	1,927	2,214	3,308	674
Anco	2,135	216	4,769	74	5,450	452
Ticllac and San Juan de la Viñaca		26				
Ecclesiastics		20				
Added total	16,659	1,427	26,331	3,574	45,184	6,325
Text total	16,758	1,409				

HUANCANE

District	1826		1830		1850		1876		1940	
	Indians	R.0057 Others	R.0122 Indians	R.0121 Others	R.0405 Indians	Archivo Nacional uncat. Others	Indians	Others	Indians	Others
Huancané		97	7,639	138	9,358	322	9,040	252	24,633	946
Santiago de Verenguelilla		70	1,926							
Vilque Chico		84	3,579	124	4,411	202	8,795	182	15,143	253
Moho		102	9,403	118	12,145	220	7,581	322	19,115	605
Rosaspata							3,494	102	6,624	190
Conima		40	2,689	52	3,382	130	3,117	172	7,172	221
Coata		52	980	41	1,404	87	1,511	133	2,927	73
Capachica		94	4,163	171	5,069	275	5,688	168	12,749	458
Paucarcolla		120	1,106	213	1,335	464	1,320	827	2,768	734
Tiquillaca		99	1,941	108	2,427	161	2,146	100	3,108	144
San Antonio de Esquilache			781	53	846	110	618	78	979	129
Santa Rosa de Chiaraque			585	7	559	9				
Cojata			2,541		3,065		2,155	357	3,238	215
San Pedro de Icho			1,441		1,779					
Inchupalla				62	1,790	110	2,686	96	4,590	135
Puno and Huatta		538	2,588	461	3,212	720	4,820	2,351	17,640	7,699
Added total		1,296	41,362	1,548	50,782	2,810	52,971	5,140	120,686	11,802
Text total		1,182		1,411	50,754	2,501				

HUANCAVELICA

District	1827		1830		1876		1940	
	R.0069 Indians	Others	Indians	R.0098 Others	Indians	Others	Indians	Others
Huancavelica	201				6,307	2,002	13,681	3,724
San Antonio	393			599				
Santa Ana	1,677			39				
San Sebastian	1,085			77				
Asunción				12				
Santa Barbara	639			52				
Acobamba	3,224			330	4,963	2,724	11,027	3,597
Anta				146				
Andabamba (El Mántaro)				127			9,216	1,146
Caja Quihuar				485	2,217	2,441	3,028	1,519
Lircay [3]				354	5,709	1,147	15,453	1,995
Callanmarca				10				
Acoria	2,324			53	8,687	69	15,864	1,519
Huando				172			6,579	305
Chupaca				45				
Añancusi				17				
Pallalla				3				
Julcamarca	1,771			354	4,905	2,358	9,130	3,079
Pata				29				
Chincho				116				
Llamostachi				1				
Huanchuy				27				
Conaica	1,052			57	2,296	42	4,195	313
Cuenca				132			1,918	878
Izcuchaca				113			697	819
Moya	1,424			149	4,055	184	4,688	1,167
Vilcabamba				174				
Acobambilla				13			1,308	178
Manta				30			662	58
Added total	13,790			3,716	39,139	10,967	97,446	20,297
Text total	13,814							

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[3] Lircay, according to R.0237, had 495 Indians in 1839; and according to R.0310, 1398 Indians in 1845. For purposes of computation, it is necessary to add the figure for 1839 to the total for 1827, yielding an added total for the province of 14,285 Indians.

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

HUANUCO

District	1826		1828		1830		1876		1940	
	Indians	R 0077 Others	R.0053 Indians	R.0053 Others	R.0114 Indians	Others	Indians	Others	Indians	Others
Huánuco, Provincial total									39, 888	27, 816
Huánuco, City							5, 848	4, 957		
Huallayco		439		510						
San Pedro		329		494						
Ucuchaca		203		242						
Mayo		235		346						
Huánuco, City, and 53 settlements			2, 834							
Huánuco, City, and 30 settlements					2, 068					
Chinchao							1, 795	710		
Higueras							3, 526	353		
Santa Maria del Valle				6, 872			5, 863	605		
S. M. del Valle and 26 settlements										
Chupaychos and 16 settlements			4, 646							
Ambo, Provincial total									14, 128	15, 887
San Miguel de Huácar							2, 445	3, 294		
Huácar and 47 settlements				3, 894						
Huácar and 11 settlements					1, 443					
Pachitea, Provincial total									17, 753	3, 480
Panao							4, 144	621		
Pozuso							77	363		
Mitimas de Chinchón and 6 settlements			1, 537							
Added total		1, 206	9, 048	5, 506	10, 383		23, 698	10, 903	71, 769	47, 183
Text total		(4)		5, 486						

[4] City only.

HUARI

District	1836		1843		1846		1876		1940	
	Indians	R.0199 Others	Indians	R.0281 Others	R.0333 Indians	R.0331; R.0330 Others	Indians	Others	Indians	Others
Huari		4, 926		6, 127	820	6, 274	1, 721	7, 708	8, 850	5, 086
Huántar		1, 501		2, 382	436	2, 606	317	3, 282	1, 189	2, 658
Chavín		1, 121		1, 747	1, 145	1, 968	1, 388	1, 835	3, 716	1, 955
San Marcos		1, 589		1, 857	398	2, 028	332	3, 019	3, 794	2, 256
Huachis		2, 448		3, 170	885	3, 287	1, 463	5, 196	4, 134	1, 986
Huacachi									6, 064	1, 821
Uco		2, 317			659	2, 980	1, 861	3, 154	2, 831	4, 530
Llamellín		3, 300			1, 268	4, 124	4, 052	3, 512	7, 935	5, 764
San Luis		3, 594			2, 217	4, 517	4, 064	3, 948	7, 296	902
Yauya									3, 913	3, 050
Chacas		5, 106			1, 389	5, 523	4, 954	7, 960	5, 657	4, 420
Added total		25, 902		(3)	9, 217	33, 307	20, 152	39, 614	55, 379	34, 428
Text totals					9, 327	33, 334				

[3] Incomplete.

HUAROCHIRI

District	1852		1876		1940	
	AHMH O. L. uncat.		Indians	Others	Indians	Others
	Indians	Others				
Huarochirí	1, 499		1, 697	1	875	2, 872
San Lorenzo de Quinti	1, 206		1, 649	180	624	3, 011
Santo Domingo de los Olleros	1, 166		688	5	560	884
San Damián	1, 708		1, 333		1, 922	1, 455
San Pedro Casta	1, 212		1, 182		1, 644	1, 580
Santiago Carampoma	1, 482		1, 143	5	1, 473	1, 135
Santa Eulalia	942		716	441	334	1, 302
San Mateo Huanchor	1, 232		1, 479	151	3, 155	3, 692
Antioquía			1, 695	26	442	281
San José Chorrillos (Cuenca)	1, 716				215	324
Langa					901	1, 435
San Juan Matucana and Surco	1, 231		1, 445	561	1, 678	4, 869
Added total	13, 394		13, 027	1, 370	13, 823	22, 840
Text total	13, 394					

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

HUAYLAS

District	1830		1836		1842	1841	1845	1846–49	1848		1876		1940	
	R.0089 Indians	Others	R.0202 Indians	R.0201 Others	R.0274 Indians	R.0264 R.0263 Others	R.0304 Indians	R.0336 Others	R.0368 R.0367 Indians	Others	Indians	Others	Indians	Others
Huaylas, Provincial total													18,341	18,397
Pueblo Libre											2,112	1,730		
Carás	4,418		4,557	4,825	4,941	5,571			5,265		5,089	3,848		
Huata											398	1,175		
Huaylas	1,103		1,188	2,134	1,243	2,359			1,162		1,582	3,859		
Mato											975	1,006		
Macate	333		333	1,149	424	1,293			491		232	3,189		
Pamparomas					941	579			911		2,044	1,106		
Timbe and Cosma	880		973	573										
Quillo	899				985	130	985	160	1,141		1,547	160		
Pampas	458		1,237	1,341	969	1,134			949		1,957	1,569		
Pariacoto					343	224			341		310	1,103		
Pira	769													
Aija, Provincial total													4,106	8,033
Aija	969		998	1,120	1,193	1,329			1,060		2,580	2,614		
Cotaparaco	657		731	882	717	914			738		1,071	1,336		
Pararín	588		686	32	693	43			579		1,392	397		
Marca	675		618	573	644	613			620		1,076	909		
Recuay	299		626	1,476	777	1,830			821		1,835	3,034		
Huarás, Provincial total													44,459	23,835
Huarás					6,911	8,328	6,901	9,083	7,826		9,145	5,481		
Jangas											1,349	1,700		
Carhuás, Provincial total													20,501	5,145
Carhuás					6,670	4,512	6,669	4,638	7,883		13,486	3,715		
Yungar											722	1,536		
Yungay, Provincial total													18,368	11,175
Ancach (Yungay)					6,540	4,257	6,440	4,527	6,890		9,824	6,613		
Mancos											2,363	725		
Shupluy											1,246	683		
Added total	(2)		(2)	(2)	33,991	33,116	(2)	(2)	36,677		62,335	47,488	105,775	66,585
Text total	27,321		30,881	30,761	33,991	33,213		[5] 34,008	36,429					

[2] Incomplete.
[5] Given in R.0368.

ICA

District	1830		1840		1876		1940	
	R.0115 Indians	R.0116 Others	R.0241 Indians	Others	Indians	Others	Indians	Others
Ica, Provincial total							12,095	62,009
Ica, City					3,839	5,924		
Santa Ana	2,084		2,525					
Anan	854		1,540					
Luren	541		609					
Molino		61						
Cerrillo and Desaguadero		79						
Carmen and Cerro Prieto		158						
Quilloay		36						
San Juan Bautista	543	70	841		3,578	3,062		
Mochicas		32						
Cachiche and Comatrana		96						
Chanchasaya and Tallamana		205						
Garganto and Santiago		127						
Santa Lucia		84						
Ocucaje		90						
Yauca	60	87	107		1,111	37		
Tingue and Curis	144		155					
Tingo	50		52					
Pueblo Nuevo					3,660	284		
San José	34		56					
Palpa and Tivillo	104	258	99		1,740	1,512		
Santa Cruz and Santiago	92		79		1,616	737		
Rio Grande	62	73	31					
San Juan del Ingenio		69						
Nasca	96	240	125		632	2,239		
Changuillo		29						
Pisco, Provincial total							3,987	21,302
Pisco, City	1	255			1,569	4,847		
San Miguel and Condor		126						
Humay, Chunchanga, Miraflores		104			237	1,165		
Added total	4,665	2,279	6,219		17,982	19,807	16,082	83,311
Text total	4,754		6,221					

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

JAÉN

District	1837		1842		1849		1876		1940	
	R.0214 Indians	Others	R.0276 Indians	Others	R.0395 Indians	Others	Indians	Others	Indians	Others
Jaén	658		707		789		438	447	1,443	3,558
Bellavista							224	159	35	1,003
Chirinos	272		296		342		560	535	713	1,530
San Ignacio							458	810	1,031	2,763
Tabaconas	198		238		497		426	277	1,405	1,307
San Felipe	223		163				219	499	844	431
Sallique							386	355	882	1,261
Colasay	508		501		452		1,004	1,146	897	3,560
Callayuc							516	561	683	5,802
Pimpingos	120		141		119		557	406		4,113
Cujillo							586	248		1,686
Choros							106	183	2	713
Querocotillo							686	834	24	8,998
Added total	1,979		2,046		2,199		6,166	6,460	7,959	36,725
Text total	1,986		2,060		2,214	[6] 5,131				

[6] Given in summary of R.0395.

JAUJA

District	1835		1845–46		1876		1940	
	R.0182 Indians	R.0182 Others	R.0320 R.0348 R.0349 Indians	Others	Indians	Others	Indians	Others
Jauja, Provincial total							56,742	46,511
Jauja, Curacy			9,440		14,405	6,777		
Jauja, City	267	1,938						
Acolla	857	418						
Marco	1,188	233						
Paca	415	438						
Huala	314	34						
Panca	277	91						
Las Huertas	416	166						
Condorsinja		89						
Tambo	135	151						
Yauli	454							
Chunan	562	75						
Apaicancha	243							
Tingo	314	70						
Yanamarca	255	138						
Acaya	167	174						
Chuquishuari	55	30						
Ataura	515	629						
Molinos	264	309						
Julcán	211	377						
Paucar	134	38						
Ricran	496	695						
Huaripampa, Curacy			3,024		3,903	1,813		
Huaripampa	232	406						
Muquiyauyo	722	387						
Huayuri	146	172						
Canchayo	194	208						
Llocllapampa	416	104						
Viscas	110	23						
Parco	511	84						
Huancayo, Provincial total							82,642	40,967
Huancayo			4,118		6,071	4,521		
Cajas								
Pariahuanca			1,980		3,615	1,485		
Sapallanga			7,989		8,587	1,697		
Chongos			6,539		1,020	2,672		
Colca					4,598	811		
Chupaca			3,356		4,912	7,245		
San Juan Iscos					3,323	159		
Sicaya			877		1,213	1,980		
Lurinhuanca (Concepción)			1,010		1,820	3,608		
San Jerónimo de Tunán			1,329		2,509	3,818		
Apata			1,361		2,741	5,231		
Orcotuna			1,183		1,359	3,893		
Mito			2,332		2,764	2,301		
Sincos			943		1,532	2,253		
Comas			1,295		2,889	2,408		
Yauli, Provincial total							14,459	16,871
Yauli			2,151		3,471	1,855		
Added total	(2)	(2)	48,927	(7)	70,732	54,527	153,843	104,349
Text total	9,890	7,427	48,927	44,106				

[2] Incomplete.

[7] Deducted from total as given in R.0349.

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

LAMPA

District	1797		1837		1876		1940	
	RR. EE. 5–29 Indians	Others	R.0234 Indians	Others	Indians	Others	Indians	Others
Pucará	2, 218				3, 100	467	5, 381	411
Orurillo	5, 208				4, 752	349	7, 394	416
Nuñoa	2, 315				2, 046	354	5, 740	730
Santa Rosa	1, 993				2, 781	263	4, 501	484
Macari	2, 961				4, 268	232	3, 795	161
Cupi	1, 243				685	88	1, 102	66
Llalli	640				614	146	1, 306	83
Ocuviri	689				940	987	1, 205	80
Umachiri	1, 860				1, 889	129	2, 141	97
Lampa and Calapuja			7, 059		6, 214	1, 139	10, 739	779
Nicasio			907		902	113	1, 405	45
Cabanilla			4, 057		4, 485	469	3, 806	199
Cabana			2, 923		3, 748	248	5, 764	930
Vilque			2, 367		2, 646	542	3, 794	617
Atuncolla			1, 635		1, 727	389	2, 779	110
Caracoto			3, 189		4, 615	373	4, 710	219
Juliaca			4, 242		5, 960	373	13, 056	2, 605
Ayaviri	2, 852				7, 254	389	8, 597	2, 142
Added total	21, 979		26, 379		58, 626	7, 050	87, 215	10, 174
Text total	(2)		[2] 26, 374					

[2] Incomplete.

LIMA

District	1848		1876		1940	
	R.0376 Indians	Others	Indians	Others	Indians	Others
Lima, Provincial total, without capital					18, 849	274, 658
Magdalena	35		446	993		
Miraflores	139		260	847		
Carabayllo	197		512	3, 304		
Ancon	82		262	370		
Santiago de Surco	425		865	1, 115		
Chorrillos and Barranco	1, 180		2, 043	3, 180		
Pachacamac	605		978	290		
Huaycan and Panquihuo	169					
Lurin	714		786	862		
Ate	35		431	2, 046		
Lurigancho			201	1, 047		
Added total	[3] 3, 581		6, 784	14, 054	18, 849	274, 658
Text total	[3] 3, 582					

[3] Adults only.

LUCANAS

District	1830		1876		1940	
	R.0100 Indians	R.0099 Others	Indians	Others	Indians	Others
Lucanas	1, 039				2, 863	698
San Juan		362	1, 562	540	253	753
Puquio	2, 175	401	2, 560	875	5, 935	2, 602
San Pedro					2, 588	480
Para y Sancos	516	309	563	539	1, 259	1, 653
Chaviña					1, 537	1, 088
Santa Lucia	691	69	600	130	2, 217	1, 058
Huac-Huas					1, 174	537
Otoca	542	88	1, 106	346	691	901
Laramate	928	320	1, 887	1, 328	911	1, 410
Llauta					1, 035	835
Ocaña					1, 419	1, 950
Cabana	1, 527	43	2, 313	120	5, 991	530
Acuará	981	128	1, 755	251	4, 936	787
Huacaña	451	53	877	168	3, 523	391
Querobamba	412	354	712	1, 154	1, 543	724
Chilcayoc					1, 051	502
Carhuanca	249	287	425	299	2, 087	214
Chalcos					1, 195	1, 042
Palco	274	121	822	322	1, 981	822
Soras	471	251	449	467	1, 660	625
Chipao	661	55	1, 425	257	3, 928	488
Added total	10, 917	2, 841	17, 056	6, 796	49, 777	20, 090
Text total	11, 002		17, 056	6, 796		

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

PARINACOCHAS

District	1826		1836		1846		1851		1876		1940	
	R.0042 Indians	Others	R.0193 Indians	Others	R.0341 Indians	R.0343 Others	Indians	R.0414 Others	Indians	Others	Indians	Others
Pausa	1,337	—	1,191	—	1,414	806	—	758	1,782	1,064	1,197	1,780
Lampa	1,158	—	1,056	—	1,336	1,666	—	1,669	1,646	2,324	2,577	3,392
Pomatambo (Oyolo)	1,274	—	1,157	—	1,505	357	—	438	1,858	381	1,443	413
Collanas and Huayta (Corculla)	683	—	712	—	740	631	—	631	507	1,242	649	1,339
Colta	991	—	976	—	1,037	548	—	507	1,258	514	1,269	1,340
Pacapausa	1,945	—	1,904	—	2,318	546	—	556	2,744	477	3,614	889
Pararca	918	—	796	—	969	410	—	378	1,186	526	904	2,465
Pullo	612	—	408	—	540	944	—	872	2,154	129	830	2,589
Chumpi	797	—	677	—	1,009	793	—	646	1,799	121	3,676	610
Coracora	4,823	—	1,312	—	1,810	931	—	982	2,882	1,610	4,853	4,602
Added total	14,538	—	10,189	—	12,678	7,632	—	7,437	17,816	8,388	21,012	19,419
Text total	—	—	10,323	—	12,713	7,453	—	7,437	—	—	21,012	19,419

PARURO

District	1830		1845		1876		1940	
	Arch. Nac. uncat. Indians	Others	Indians	R.0319 Others	Indians	Others	Indians	Others
Ccapi	1,027	—	—	439	1,090	657	2,177	1,096
Collcha	619	—	—	90	922	878	2,258	1,207
Pampacucho	221	—	—	129	—	—	—	—
Accha	—	—	—	—	1,294	2,076	2,592	2,897
Accha Anansaya	617	—	—	115	—	—	—	—
Accha Urinsaya	851	—	—	189	—	—	—	—
Pillpinto	—	—	—	228	—	—	—	—
Omacha	1,613	—	—	25	1,922	480	4,326	384
Ccoyabamba	—	—	—	117	—	—	—	—
Tucuyachi (San Lorenzo)	67	—	—	49	—	—	—	—
Huanoquite	1,508	—	—	63	1,826	687	2,672	642
Ccorca	1,286	—	—	28	—	—	—	—
Paruro	1,521	—	—	—	2,867	2,101	6,636	2,246
Yaurisque	2,168	—	—	59	—	—	—	—
Pacarictambo	—	—	—	223	—	—	—	—
Added total	11,498	—	—	1,754	9,921	6,879	20,661	8,472
Text total	—	—	—	1,767	—	—	—	—

PATAZ

District	1831		1835–1837		1842		1847		1876		1940	
	Indians	R.0138 Others	R.0273 Indians	R.0179 Others	R.0273 Indians	Others	R.0360 Indians	Others	Indians	Others	Indians	Others
Cajamarquilla (Bolívar)	—	1,138	945	1,170	893	—	1,039	—	1,414	2	301	2,059
Longotea	—	—	—	—	—	—	—	—	—	—	17	394
Ucuncha	—	—	—	—	—	—	—	—	—	—	47	316
Chillia	—	3,625	731	3,785	655	—	759	—	2,319	1,523	1,806	4,315
Challas (Tayabamba)	—	4,171	1,171	4,817	1,183	—	1,359	—	3,298	2,818	1,256	10,471
Huaylillas	—	—	—	—	—	—	—	—	406	632	813	694
Uchumarca	—	—	327	—	315	—	316	—	555	—	398	723
Ongón	—	—	—	—	—	—	—	—	—	—	28	1,499
Bambamarca	—	—	407	—	411	—	465	—	1,403	140	409	757
Condormarca	—	—	347	—	312	—	302	—	—	—	—	670
Patás	—	—	370	—	294	—	371	—	1,892	2,126	1,922	1,255
Soledad	—	—	237	—	194	—	243	—	434	140	—	—
Parcoy	—	—	846	—	824	—	1,050	—	1,719	210	1,010	5,647
Huayo	—	—	437	—	371	—	382	—	854	28	1,289	696
Buldibuyo	—	—	451	—	391	—	487	—	613	1,677	418	3,788
Huancaspata	—	—	1,207	—	1,391	—	1,447	—	4,856	185	1,905	5,803
Ecclesiastics	—	9	—	9	—	—	—	—	—	—	—	—
Added total	—	8,943	7,476	9,781	7,234	—	8,220	—	19,763	9,481	11,619	39,087
Text total	—	8,950	7,476	9,879	7,234	—	8,220	—	19,763	9,481	—	—

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

PAUCARTAMBO

District	1825–1826		1830		1845		1876		1940	
	Indians	AHMH O. L. 150 42. Others	Indians	R.0106 Others	R.0375 Indians	Others	Indians	Others	Indians	Others
Paucartambo	-----	306	-----	384	2,688	-----	2,897	846	5,185	1,618
Ccatca	-----	78	-----	110	3,960	-----	2,643	314	7,102	588
Caicay	-----	102	-----	106	1,261	-----	2,804	301	4,604	611
Huasacc	-----	87	-----	111	1,369	-----	-----	-----	-----	-----
Colquepata	-----	40	-----	33	3,715	-----	1,899	207	4,256	138
Challabamba	-----	14	-----	29	905	-----	1,968	207	3,546	1,018
Paucarbamba	-----	-----	-----	-----	176	-----	-----	-----	-----	-----
Amparaes	-----	24	-----	10	743	-----	-----	-----	-----	-----
Ecclesiastics	-----	-----	-----	19	-----	-----	-----	-----	-----	-----
Added total	-----	651	-----	802	14,641	-----	12,211	1,875	24,693	3,973
Text total	-----	-----	-----	783	-----	-----	-----	-----	-----	-----

QUISPICANCHIS

District	1826		1830		1835		1851		1876		1940	
	R.0049 Indians	R.0048 Others	R.0108 Indians	R.0107 Others	R.0181 Indians	Others	Indians	R.0419 Others	Indians	Others	Indians	Others
Oropesa	2,045	756	2,229	903	2,295	-----	-----	156	2,761	1,780	4,550	2,539
Andahuaylillas	598	210	723	275	761	-----	-----	88	-----	-----	1,731	662
Urcos	2,522	255	3,107	272	3,249	-----	-----	111	3,701	1,235	9,776	2,165
Guaroc	-----	148	-----	186	-----	-----	-----	48	-----	-----	-----	-----
Quiquijana (Yanacocha)	3,929	540	4,801	561	4,690	-----	-----	226	5,037	1,218	11,253	2,313
Sangarará	3,833	68	3,713	71	4,666	-----	-----	119	3,221	271	4,526	355
Marcaconga	-----	31	-----	56	-----	-----	-----	-----	-----	-----	-----	-----
Yananpampa	-----	30	-----	43	-----	-----	-----	-----	-----	-----	-----	-----
Acopia	-----	106	-----	102	-----	-----	-----	-----	-----	-----	-----	-----
Mosocllacta	-----	-----	-----	10	869	-----	-----	-----	-----	-----	-----	-----
Pueblo Nuevo	761	7	847	-----	-----	-----	-----	-----	-----	-----	-----	-----
Pomacanchi	2,625	247	3,192	245	3,217	-----	-----	162	4,631	488	9,265	1,176
Santa Lucia	-----	13	-----	17	-----	-----	-----	-----	-----	-----	-----	-----
San Juan	-----	21	-----	23	-----	-----	-----	-----	-----	-----	-----	-----
Acos	2,639	248	3,043	227	3,260	-----	-----	84	4,099	2,099	2,820	1,517
Huayqui	-----	102	-----	85	-----	-----	-----	-----	-----	-----	-----	-----
Acomayo	-----	301	-----	312	-----	-----	-----	42	-----	-----	4,284	1,035
Papres	1,406	25	1,575	12	1,776	-----	-----	78	-----	-----	-----	-----
Sancca	-----	104	-----	118	-----	-----	-----	-----	-----	-----	-----	-----
Pirque	-----	86	-----	75	-----	-----	-----	-----	-----	-----	-----	-----
Quihuares	828	84	1,027	83	1,079	-----	-----	2	-----	-----	-----	-----
Rondocán	-----	-----	-----	-----	-----	-----	-----	36	2,383	375	3,577	842
Ocongate	1,056	201	1,370	212	1,475	-----	-----	30	2,349	264	5,513	517
Marcapata	753	162	1,030	180	1,092	-----	-----	44	1,632	394	2,928	2,274
Quispicanchi (Machaca)	413	-----	438	-----	477	-----	-----	-----	-----	-----	-----	-----
Added total	23,408	3,745	27,095	4,068	28,906	-----	-----	1,226	29,814	8,124	60,223	15,395
Text total	23,033	-----	27,297	4,063	28,901	-----	-----	-----	-----	-----	-----	-----

SANTA

District	1826		1837		1841		1848		1854		1876		1940	
	AHMH O. L. 167 Indians	O. L. 167 Others	R.0257 Indians	R.0617 Others	R.0257 Indians	Others	R.0338 Indians	Others	R.0452 Indians	R.0452 Others	Indians	Others	Indians	Others
Santa	47	209	-----	261	47	-----	43	-----	205	-----	480	2,498	323	1,905
Chimbote	65	-----	-----	68	70	-----	83	-----	-----	-----	-----	-----	1,175	8,548
Lacramarca	14	98	-----	-----	51	-----	48	-----	-----	-----	-----	-----	-----	-----
Nepeña	80	389	-----	644	40	-----	44	-----	138	-----	1,556	3,765	981	4,330
Huambacho	-----	-----	-----	-----	33	-----	56	-----	-----	-----	-----	-----	-----	-----
Moro	11	348	-----	353	63	-----	49	-----	39	-----	998	1,802	3,071	2,362
Casma	85	-----	-----	273	74	-----	141	-----	188	-----	1,458	4,299	1,332	4,892
Yaután	16	-----	-----	25	52	-----	50	-----	-----	-----	335	357	542	784
Huarmey	299	-----	-----	120	324	-----	415	-----	398	-----	757	334	248	3,462
Added total	617	(2)	-----	1,744	754	-----	929	-----	968	-----	5,584	13,055	7,672	26,283
Text total	-----	-----	415	-----	671	-----	881	-----	852	3,900	5,584	13,055	7,672	26,283

[2] Incomplete.

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

TACNA-ARICA

District	1828		1830 AHMH uncataloged		1876		1940	
	Indians	R.0136 Others	Indians	Others	Indians	Others	Indians	Others
Arica		2,152		2,005	4,086	4,955		
Codpa				200				
Belen				39				
Tacna		3,182		3,195	10,572	8,673	6,483	14,549
Calana								
Ilabaya		642		1,109				
Locumba		438						
Pachia								
Sama		1,839		985				
Tarata		83		77	7,149	574	12,480	2,837
Candarave				92				
Ecclesiastics				24				
Added total		8,336		7,726	21,807	14,202		
Text total			12,579	7,726	21,807	14,202		
Minus Arica		6,184			17,721	9,247	18,963	17,386

TARAPACA

District	1840		1845		1876	
	R.0621 Indians	R.0621 Others	R.0308 Indians	R.0621 Others	Indians	Others
Tarapacá			1,601	799	2,352	1,580
Mamiña					1,042	1
Santa Rosa				210		
Huantajara				210		
Sibaya			1,112	19	1,061	18
Pica			631	601	3,708	4,528
Mantilla				426		
Guatacongo				206		
Quillaġa				87		
Pabellón				95		
Tirana				454		
Camiña			2,482	327	1,148	149
Chiapa					1,125	1
Huaina Pisagua				161	2,568	3,369
Iquique				791	3,682	11,893
Added total			5,826	4,386	16,686	21,539
Text totals	5,797	3,832	5,825	4,593	16,686	21,539

TAYACAJA

District	1826		1830		1841		1846		1876		1940	
	Indians	R.0043 Others	Arch. Nac. uncat.		R.0261 Indians	Others	R.0351 Indians	Others	Indians	Others	Indians	Others
			Indians	Others								
Pampas		848		976	5,427		6,378		4,899	2,912	11,962	1,785
Huaribamba		560		120	1,801		2,620		3,434	271	7,886	495
Acostambo											2,883	1,440
Ñahuimpuquio											840	441
Surcubamba		690		733	590		752		1,294	1,641	4,700	2,974
Paucarbamba		585		790	1,634		2,107		3,669	1,240	8,402	1,851
Mayoc		608		624	2,395		3,485		2,429	1,248	4,472	1,523
Locroja									2,760	608	5,399	558
Salcabamba				599	1,164		2,034		3,542	1,042	7,668	1,791
Colcabamba				400	1,595		2,198		3,458	1,122	8,778	1,354
Anco				430	821		1,261		1,613	979	6,213	644
Added total		3,291		4,672	15,427		20,835		27,098	11,063	69,203	14,856
Text total				4,727	15,618		20,820				69,203	14,856

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

TRUJILLO

District	1788–1837		1852		1876		1940	
	Martínez MS. and Compañón Guía, 1837		Indians	R.0639 Others	Indians	Others	Indians	Others
	Indians	Others						
Trujillo, Municipal District					2,229	8,371	991	44,937
Cathedral Parish		5,515						
San Sebastian	274	1		191				
Huanchaco					555	158	41	739
Moche					1,148	181	1,849	1,924
Salaverry							222	3,181
Santiago de Cao	843	692		364	1,106	1,112	2,115	9,530
Magdalena de Cao	150	183		113	278	636	316	1,352
Chocope	51	631		339	437	2,117	693	13,492
Paiján	301	36		123	1,878	1,066	505	4,564
Ascope				692	671	4,729	553	8,742
Chicama				376	222	1,731	1,341	5,579
Rázuri							352	2,998
Simbal	218	273		534	527	710	527	2,750
Virú	1,797	128		315	1,571	1,126	2,095	5,294
Mansiche	888	51						
Added total	4,577	7,455		3,047	10,622	21,937	11,600	105,082
Text totals								

UNION

District	1826–30		1845–46		1876		1940	
	R.0042 Indians	R.0101 Others	R.0340 Indians	R.0307 Others	Indians	Others	Indians	Others
Saila	593	114	851	626	1,030	383	1,052	812
Charcana	364	194	551	566	401	698	378	771
Quechualla					102	754	97	467
Pampamarca	1,213	55	1,528	181	1,216	114	1,599	294
Huainacotas	1,210	216	1,571	796	1,259	1,081	2,214	969
Added total	3,380	579	4,501	2,169	4,008	3,030	5,243	2,846
Text total								

URUBAMBA

District	1826 Arch. Nac. uncat. & R.0050 R.0051		1830		1841		1846		1852		1876		1940	
	Indians	Others	R.0110 Indians	R.0109 Others	Indians	R.0269 Others	Indians	R.0345 Others	R.0636 Indians	R.0635 Others	Indians	Others	Indians	Others
San Pedro de Urubamba	833	661	728	414		240		57	713	50	3,582	3,463	1,291	5,128
Santiago de Yucay	1,007	436	962	313		218		64	1,193	50			697	1,783
San Juan de Huaillabamba	1,561	388	1,532	190		222		122	1,765	27			1,276	1,734
Santiago de Ollantaytambo	1,080	641	996	255		81		47	1,476	40	934	1,712	1,662	4,207
Sillque				110		21		18						
Umuto			358	221		83		42	316	16				
Huiro	554	449												
Huayopata	159	156	185	103		68		21	188	41	1,399	464	3,017	2,396
Chavillay		36		40				93						
Chinchero	191	175	152	97		64		31	104	17			5,586	204
Maramura	111	237	138	184		108		85	156	48				
Chaco	295	471	368	226		77		68	356	50				
Media Luna				68		45								
Echarati			98					79			1,171	1,202	1,996	1,531
Cocabambilla		35												
Soccospata										8				
Santa Ana	422	261	409	17		100		110	473	36	3,507	963	3,017	4,169
Potrero						33		42		37				
Uchumayo		20												
Huayanay		83						14						
Mesacancha	22	35	205			15		21	196	2				
Huadquina		56		38										
Yanama		83		65										
Vilcabamba	974	90	1,103	57		10		10	1,527	9			6,382	2,598
Pucyura		105		18										
Lucma		28		97										
Ocobamba	278	77	332	47		91		62		37	867	616	251	1,886
Mosocllacta		115				45		25		18				
Buenos Aires		69		48		43		53		55				
Mantaytambo				87										
San Francisco de Maras	2,081	814	2,019	505		49		46	2,404	26	4,090	2,900	4,003	1,987
Ecclesiastics						41								
Added total	9,568	5,521	9,585	3,365		1,741		1,110	10,867	567	15,550	11,320	29,178	27,623
Text total				3,808		1,743		1,142	10,866	552				

TABLE 2.—*Provincial castes, by district and date, from 1826 to 1940, arranged by territorial units as of 1826/54*—Continued

YAUYOS

District	1826		1836		1876		1940	
	Indians	R.0055 Others	R.0206 Indians	Others	Indians	Others	Indians	Others
Yauyos		426	2,272		2,057	232	453	1,595
Allauca							714	688
Miraflores							35	722
Laraos		257	2,843		3,353	385	346	1,274
Huantán							191	1,137
Lérida							560	806
Alis		82					81	960
Carania							156	548
Vitis		24						
Tomás		117					276	822
Huancaya							241	917
Ayaviri		30	768		866	90	616	366
Quinocay		48						
Viscas		61						
Huampará		51					208	793
Omas		134	539		515	123	1,148	487
Huañec		24	1,752		1,821	350	137	1,651
Quinches		20					518	1,292
Tauripampa			1,106		1,033	4	733	271
Colonia							1,525	866
Viñac			807		685		1,037	1,052
Chupamarca			992		1,309	101	1,186	267
Pampas			2,560		2,145	6		
Added total		1,274	13,639		13,784	1,291	10,161	16,514
Text total		1,295	13,563					

CASTE PERCENTAGES BY PROVINCE (1826/54–1940) ARRANGED BY TERRITORIAL UNITS AS OF 1826/54 (TABLE 3)

The main problem is to utilize the incomplete counts among the various counts available for many provinces in the period 1826/54. This can often be done by referring to figures published in the census of 1836 or of 1850. These published reports, fragmentary as they are, were based upon the *matrículas*, and represent summations of the returns from each province. Thus, if the Indian register for a province has survived, but not the register of *castas*, the total of the latter can be deduced by reference to either of the contemporary census reports. The operation has been footnoted wherever it was performed.

The territorial units, as in table 2, are based upon the units as of 1826/54. Population figures from 1876 and 1940 are adjusted to these territorial units.

The special purpose of table 3 is to give at a glance the caste percentages at various periods by uniform territories. It also emends many lacunae of table 2 by reference to printed sources of the period. The maps of the next section are based principally upon table 3.

TABLE 3.—*Summary of caste totals and percentages, by province and year, 1826–1940, arranged by territorial units as of 1826/54*

[Figures in braces: These total and derived figures were deduced by combining incomplete sources bearing on short time-spans. Italicized figures are those deduced from, but not given by, the sources]

ABANCAY

Year	Sources	Total	Indians	Percent of total	Others	Percent of total
1826–39	R.0044; R.0045; R.0102; R.0237.	9,698	6,130	63.21	3,568	27.79
1840	*El Correo* [1]	(5,980)	(4,557)	76.2	(1,423)	23.8
1845	R.0310; R.0311	8,276	6,570	79.39	1,706	20.61
1851	R.0417; R.0633	9,897	8,232	83.18	1,665	16.82
1876		16,449	8,226	50.01	8,223	49.99
1940		36,122	24,028	66.52	12,094	33.48

[1] Taxpayers only, and including Anta Province (separated from Abancay in 1838).

ANDAHUAYLAS

1836	R.0180; R.0196	22,850	14,899	65.2	7,951	34.8
1841	R.0267; R.0266	31,127	18,926	60.8	12,201	39.2
1876		48,100	26,167	54.4	21,933	45.6
1940		107,726	86,289	80.1	21,437	19.9

ANTA

1826–30	R.0102; R.0044	17,594	14,989	85.19	2,605	14.81
1845	R.0373; R.0312	20,977	17,947	85.56	3,030	14.44
1850	Census	}22,980	[2] *18,695*	81.35		
1851	R.0647	}			4,285	18.65
1876		21,668	15,292	70.57	6,376	29.43
1940		39,377	27,797	70.59	11,580	29.41

[2] By subtracting R.0647 from census total of 1850.

TABLE 3.—*Summary of caste totals and percentages, by province and year, 1826–1940, arranged by territorial units as of 1826/54*—Continued

ASANGARO

Year	Sources	Total	Indians	Percent of total	Others	Percent of total
1826–35	R.0059; R.0058; R.0184.	42,657	40,835	95.73	1,822	4.27
1851	*Guia . . . 1851*	54,333	52,063	95.82	2,270	4.18
1876	--------	53,269	50,393	94.6	2,876	5.4
1940	--------	111,326	106,373	95.55	4,953	4.45

AIMARAES

1826	R.0045	[3]*24,633*	--------	--------	6,857	27.84
1834	*El Penitente*		17,776	72.16	--------	--------
1840	*El Correo*	[4]28,638	18,776	65.58	9,854	34.42
1851	R.0629	--------	--------	--------	8,897	--------
1876	--------	25,330	10,443	41.23	14,887	58.77
1940	--------	50,084	26,301	52.51	23,783	47.49

[3] By adding figures for 1826 and 1834.
[4] Misprint for 28,630.

CAILLOMA

1843	R.0284; R.0286	21,522	19,343	89.88	2,179	10.12
1848	R.0370		--------	--------	2,699	11.51
1850	Census	23,446	[5]*20,747*	88.49	--------	--------
1876	--------	20,220	16,796	83.07	3,424	16.93
1940	--------	30,210	22,734	75.25	7,476	24.75

[5] By subtracting R.0370 from total given by census of 1850.

CAJAMARCA

1826	R.0052		19,878	47.34	--------	--------
1837	*Guia . . . 1837*	41,993	--------	--------	[6]*22,115*	52.66
1841	*Guia . . . 1841*	42,762	22,787	53.29	19,975	46.71
1847	R.0359		23,426	50.79	--------	--------
1850	Census	46,122	--------	--------	[7]*22,696*	49.21
1876	--------	82,538	27,730	33.6	54,808	66.4
1940	--------	190,863	39,541	20.72	151,322	79.28

[6] By subtracting R.0052 from total given by *Guia . . . 1837*.
[7] By subtracting R.0359 from total given census of 1850.

CAJATAMBO

1837	*Guia . . . 1837*	18,464	--------	--------	--------	--------
1846	R.0346		--------	--------	9,240	37.26
1850	Census	24,799	[8]*15,559*	62.74	--------	--------
1876	--------	31,035	20,399	65.73	10,636	34.27
1940	--------	52,307	25,929	49.57	26,378	50.43

[8] By subtracting R.0346 from total of census of 1850.

CALCA

1830	R.0103	[9]*15,471*	--------	--------	906	5.86
1834	*El Penitente* [10]	(4,070)	(3,598)	88.4	(472)	11.6
1836	R.0198	[9]*15,471*	14,565	94.14	--------	--------
1845	R.0316; R.0317	18,425	16,853	91.47	1,572	8.53
1851	*Guia . . . 1851*	14,223	11,833	83.2	2,390	16.8
1851	R.0418	--------	17,394	--------	--------	--------
1876	--------	14,086	11,017	78.21	3,069	21.79
1940	--------	33,778	23,190	68.65	10,588	31.35

[9] By adding R.0103 and R.0198.
[10] Taxpayers only. Total population not given.

CANAS

1834	*El Penitente* [11]	36,109	33,119	91.72	2,990	8.28
		(11,744)	(11,073)	94.29	(671)	5.71
1845	R.0317		--------	--------	316	.84
1850	Census	37,605	[12]*37,289*	99.16	--------	--------
1876	--------	35,866	33,720	94.02	2,146	5.98
1940	--------	58,264	53,654	92.09	4,610	7.91

[11] Although the report refers to Tinta Province, the figures enumerate the inhabitants only of Canas Province. The numbers of taxpayers are given as well, indicated here in parentheses.
[12] By subtracting R.0317 from total given by census of 1850.

TABLE 3.—*Summary of caste totals and percentages, by province and year, 1826–1940, arranged by territoral units as of 1826/54*—Continued

CANTA

Year	Sources	Total	Indians	Percent of total	Others	Percent of total
1813	Archivo Arzob	9,433	7,013	74.35	2,420	25.65
1837	*Guia . . . 1837*	13,932	--------	--------	--------	--------
1850	Census	14,384	--------	--------	--------	--------
1876	--------	16,650	14,978	89.96	1,672	10.04
1940	--------	27,965	9,751	34.87	18,214	65.13

CARABAYA

1830	R.0119; R.0120	18,551	17,354	93.55	1,197	6.45
1850	Census	22,138	--------	--------	--------	--------
1850	R.0404		20,652	93.29	[13]*1,486*	6.71
1876	--------	23,185	20,029	86.39	3,156	13.61
1940	--------	42,896	36,491	85.07	6,405	14.93

[13] By subtracting R.0404 from the total given by census of 1850.

CASTROVIRREYNA

1836	R.0204; [14]R.0191	(2,448)	(2,349)	95.96	(99)	4.04
1846	R.0350		11,654	81.22	--------	--------
1850	Census	14,348	--------	--------	[15]*2,694*	18.78
1876	--------	14,802	14,686	99.22	116	.78
1940	--------	47,374	28,310	59.76	19,064	40.24

[14] Taxpayers only.
[15] By subtracting R.0350 from total in census of 1850.

CHACHAPOYAS

1837–38	R.0211		--------	--------	8,421	45.7
1837	*Guia . . . 1837*	18,426	[16]*10,005*	54.3	--------	--------
1876	--------	34,284	18,201	53.09	16,083	46.91
1940	--------	65,065	13,266	20.39	51,799	79.61

[16] By subtracting R.0211 from *Guia . . . 1837*.

CHANCAY

1836	R.0205		--------	--------	5,585	29.85
1837	*Guia . . . 1837*	18,712	[17]*13,127*	70.15	--------	--------
1848	Bibl. Nac	13,943	10,512	75.39	3,431	24.61
1876	--------	36,440	17,903	49.13	18,537	50.87
1940	--------	128,944	30,634	23.76	98,310	76.24

[17] By subtracting R.0205 from *Guia . . . 1837*.

CHOTA

1838	R.0228	53,775	19,859	36.93	33,916	63.07
1850	Census	62,597	--------	--------	--------	--------
1876	--------	98,314	31,409	31.95	66,905	68.05
1940	--------	214,189	8,073	3.77	206,116	96.23

CHUCUITO

1850	Census	75,957	--------	--------	[18]*9,228*	12.15
1853	R.0440		66,729	87.85	--------	--------
1876	--------	59,452	56,509	95.05	2,943	4.95
1940	--------	155,162	147,755	95.23	7,407	4.77

[18] By subtracting R.0440 from census of 1850.

CHUMBIVILCAS

1830	R.0105		16,952	89.00	--------	--------
1834	*El Penitente*	19,048	--------	--------	[19]*2,096*	11.00
1840	*El Correo*	(3,886)	(3,471)	89.32	(415)	10.68
1876	--------	29,389	22,753	77.42	6,636	22.58
1940	--------	54,905	41,487	75.56	13,418	24.44

[19] By subtracting R.0105 from total for 1834.

TABLE 3.—*Summary of caste totals and percentages, by province and year, 1826–1940, arranged by territorial units as of 1826/54*—Continued

CONCHUCOS

Year	Sources	Total	Indians	Percent of total	Others	Percent of total
1830	R.0112				20, 165	45. 72
1837	*Guia . . . 1837*	44, 110	[20]*23,945*	54. 28		
1876		65, 566	24, 322	37. 1	41, 244	62. 9
1940		101, 978	55, 063	53. 99	46, 915	46. 01

[20] By subtracting R.0112 from *Guia . . . 1837.*

COTABAMBAS

1830–31	R.0084; R.0104	21, 979	15, 614	71. 04	6, 365	28. 96
1840	*El Correo* [21]	(4, 632)	(3, 161)	68. 24	(1, 471)	31. 76
1876		28, 646	19, 845	69. 28	8, 801	30. 72
1940		64, 182	44, 103	68. 72	20, 079	31. 28

[21] Taxpayers only.

CUZCO

1840	*El Correo* [22]	40, 000 (3, 154)	(1, 476)	46. 8	(1, 678)	53. 2
1876		23, 108	9, 455	40. 91	13, 653	59. 09
1940		54, 631	16, 622	30. 43	38, 009	69. 57

[22] Subtotal given by taxpayers only. Total taxpayers not given.

HUAMACHUCO

1826	R.0054		18, 762	43. 57		
1837	*Guia . . . 1837*	43, 058			[23]*24, 296*	56. 43
1876		43, 519	19, 340	44. 44	24, 179	55. 56
1940		85, 798	20, 178	23. 52	65, 620	76. 48

[23] By subtracting R.0054 from *Guia . . . 1837.*

HUAMALIES

1830	R.0113	17, 889	8, 768	49. 01	9, 121	50. 99
1841	R.0262; R.0265	23, 684	11, 047	46. 64	12, 637	53. 36
1846–52	R.0347; R.0637	28, 863	14, 537	50. 36	14, 326	49. 63
1876		44, 380	23, 443	52. 82	20, 937	47. 18
1940		115, 072	76, 735	66. 68	38, 337	33. 32

HUAMANGA

1830	R.0096; R.0094	18, 167	16, 758	92. 24	1, 409	7. 76
1876		29, 905	26, 331	88. 05	3, 574	11. 95
1940		51, 509	45, 184	87. 72	6, 325	12. 28

HUANCANE

1830	R.0122; R.0121	42, 773	41, 362	96. 7	1, 411	3. 3
1850	R.0405; Arch. Nac.	53, 255	50, 754	95. 3	2, 501	4. 7
1876		58, 111	52, 971	91. 15	5, 140	8. 85
1940		132, 488	120, 686	91. 09	11, 802	8. 91

HUANCAVELICA

1827–30	R.0069; R.0098	18, 001	14, 285	79. 36	3, 716	20. 64
1876		50, 106	39, 139	78. 11	10, 967	21. 89
1940		117, 743	97, 446	82. 76	20, 297	17. 24

HUANUCO

1828	R.0053	14, 534	9, 048	62. 25	5, 486	37. 75
1876		34, 601	23, 698	68. 49	10, 903	31. 51
1940		118, 952	71, 769	60. 33	47, 183	39. 67

TABLE 3.—*Summary of caste totals and percentages, by province and year, 1826–1940, arranged by territorial units as of 1826/54*—Continued

HUARI

Year	Sources	Total	Indians	Percent of total	Others	Percent of total
1846	R.0333; R.0331; R.0330.	42, 661	9, 327	21. 86	33, 334	78. 14
1876		59, 766	20, 152	33. 72	39, 614	66. 28
1940		89, 807	55, 379	61. 66	34, 428	38. 34

HUAROCHIRI

1850	Census	14, 258			[24] *864*	6. 06
1852	O. L. uncat		13, 394	93. 94		
1876		14, 397	13, 027	90. 48	1, 370	9. 52
1940		36, 663	13, 823	37. 70	22, 840	62. 30

[24] By subtracting Indians for 1852 from census of 1850.

HUAYLAS

1836	R.0202; R.0201	61, 642	30, 881	50. 1	30, 761	49. 9
1846–49	R.0336; R.0368; R.0367.	70, 437	36, 429	51. 72	34, 008	48. 28
1876		109, 823	62, 335	56. 76	47, 488	43. 24
1940		172, 360	105, 775	61. 37	66, 585	38. 63

ICA

1830	R.0115; R.0116	7, 033	4, 754	67. 60	2, 279	32. 40
1840	R.0241		6, 221	48. 15		
1850	Census	12, 920			[25] *6, 699*	51. 85
1876		37, 789	17, 982	47. 59	19, 807	52. 41
1940		99, 393	16, 082	16. 18	83, 311	83. 82

[25] By subtracting R.0241 from census of 1850.

JAEN

1780	Arch. Nac. Bogotá	6, 851	2, 934	42. 83	3, 917	68. 17
1788	Martínez de C	6, 200	3, 047	49. 15	3, 153	50. 85
1837	R.0214		1, 986	29. 62		
1837	*Guia . . . 1837*	6, 706			[26] *4, 720*	70. 38
1849	R.0395	7, 345	2, 214	30. 14	5, 131	69. 86
1876		12, 626	6, 166	48. 84	6, 460	51. 10
1940		44, 684	7, 959	17. 81	36, 725	82. 19

[26] By subtracting R.0214 from *Guia . . . 1837.*

JAUJA

1835	[27] R.0182	17, 317	9, 890	57. 11	7, 427	42. 89
1837	*Guia . . . 1837*	61, 023				
1845–46	R.0320; R.0348; R.0349.	93, 033	48, 927	52. 59	44, 106	47. 41
1876		125, 259	70, 732	56. 47	54, 527	43. 53
1940		258, 192	153, 843	59. 58	104, 349	40. 42

[27] Figures complete for present-day territory of Jauja Province only.

LIMA

1836	*Guia . . . 1841*	65, 116	9, 690	14. 88	55, 426	85. 12
1876		120, 994	26, 414	21. 83	94, 580	78. 17
1940		562, 885	27, 944	4. 96	534, 941	95. 04

LUCANAS

1830	R.0100; R.0099	13, 843	11, 002	79. 48	2, 841	20. 52
1876		23, 852	17, 056	71. 51	6, 796	28. 49
1940		69, 867	49, 777	71. 25	20, 090	28. 75

TABLE 3.—*Summary of caste totals and percentages, by province and year, 1826–1940, arranged by territorial units as of 1826/54*—Continued

PARINACOCHAS

Year	Sources	Total	Indians	Percent of total	Others	Percent of total
1826	R.0042	--------	[28]14,538			
			(2,256)	44.81	--------	--------
1830	R.0101	[25](5,035)	--------	--------	[28](2,779)	55.19
1846	R.0341; R.0343	20,166	12,713	63.04	7,453	36.96
1876		26,204	17,816	67.99	8,388	32.01
1940		40,431	21,012	51.97	19,419	48.03

[28] Taxpayers only. Total not given but calculated from R.0101 and R.0042.

PARURO

1830	Arch. Nac. uncat.	--------	11,498	--------	--------	--------
	El Correo (1840)	[29](3,459)	(2,792)	80.72	(667)	19.28
1845	R.0319	--------	--------	--------	1,767	9.97
1850	Census	17,732	[30]*15,965*	90.03	--------	--------
1876		16,800	9,921	59.05	6,879	40.95
1940		29,133	20,661	70.92	8,472	29.08

[29] The printed figures of 1840 repeat the MS. figures of 1830, but mention taxpayers only.
[30] By subtracting R.0319 from census of 1850.

PATAZ

1835–37	R.0273; R.0179	17,355	7,476	43.08	9,879	62.92
1847	R.0360	--------	--------	--------	8,220	41.22
1850	Census	19,940	[31]*11,720*	58.78	--------	--------
1876		29,244	19,763	67.58	9,481	32.42
1940		50,706	11,619	22.91	39,087	77.09

[31] By subtracting R.0360 from total in census of 1850.

PAUCARTAMBO

1830	R.0106	--------	--------	--------	783	6.68
	El Penitente, 1834	11,720	*10,937*	[32] 93.32	--------	--------
	El Correo, 1840	11,720	--------	--------	--------	--------
	El Correo, 1840 [33]	(3,323)	(3,042)	91.45	(281)	8.46
1845	R.0375	--------	14,641	85.09	--------	--------
1850	Census	17,206	--------	--------	[34] 2,565	14.91
1876		14,086	12,211.	86.69	1,875	13.31
1940		28,666	24,693	86.14	3,973	13.86

[32] By subtracting R.0106 from total for 1834.
[33] Taxpayers only.
[34] By subtracting R.0375 from census of 1850.

PIURA

1828	*Arbitraje* 1906	--------	--------	--------	22,872	42.5
1837	*Guía . . . 1837*	53,815	[35]*30,943*	57.5	--------	--------
1876		135,615	79,792	58.84	55,823	41.16
1940		434,314	154,890	35.66	279,424	64.34

[35] By subtracting figure for 1828 from *Guía . . . 1837*.

QUISPICANCHIS

1826	R.0049; R.0048	26,778	23,033	86.01	3,745	13.99
1830	R.0108; R.0107	31,360	27,297	87.04	4,063	12.96
1876		37,938	29,814	78.59	8,124	21.41
1940		75,618	60,223	79.64	15,395	20.36

SANTA

1837	R.0257; R.0617	2,159	415	19.22	1,744	80.78
1850	R.0452	4,752	852	17.93	3,900	82.07
1876		18,639	5,584	29.96	13,055	70.04
1940		33,955	7,672	22.59	26,283	77.41

TABLE 3.—*Summary of caste totals and percentages, by province and year, 1826–1940, arranged by territorial units as of 1826/54*—Continued

TACNA and ARICA

Year	Sources	Total	Indians	Percent of total	Others	Percent of total
1830	AHMH uncat.	20,305	12,579	61.95	7,726	38.05
1876		36,009	21,807	60.56	14,202	39.44
1940	Minus Arica	36,349	18,963	52.17	17,386	47.83

TARAPACA

1840	R.0621	9,629	5,797	60.2	3,832	39.8
1845	R.0308; R.0621	10,418	5,825	55.91	4,593	44.09
1876		38,225	16,686	43.65	21,539	56.35
1940	(Province passed to Chile).	--------	--------	--------	--------	--------

TAYACAJA

1830	Arch. Nac. uncat.	[36]*20,345*	--------	--------	4,727	23.23
1841	R.0261	--------	15,618	76.77	--------	--------
1846	R.0351	--------	20,820	76.68	--------	--------
1850	Census	27,151	--------	--------	[37] *6,331*	23.32
1876		38,161	27,098	71.01	11,063	28.99
1940		84,059	69,203	82.33	14,856	17.67

[36] By adding figures for 1830 and 1841.
[37] By subtracting R.0351 from census of 1850.

TRUJILLO

1788	Martínez de Compañón.	12,032	4,577	38.04	7,455	61.96
1837	*Guía. . . 1837*	12,032	--------	--------	--------	--------
1850	Census	7,211	[38] *4,164*	57.75	--------	--------
1852	R.0639	--------	--------	--------	3,047	42.25
1876		32,559	10,622	32.62	21,937	67.38
1940		116,682	11,600	9.94	105,082	90.06

[38] By subtracting R.0639 from census of 1850.

UNION

1826–30	R.0042; R.0101	3,959	3,380	85.38	579	14.62
1845–46	R.0340; R.0307	6,670	4,501	67.48	2,169	32.52
1876		7,038	4,008	56.95	3,030	43.05
1940		8,089	5,243	64.82	2,846	35.18

URUBAMBA

1826	Arch. Nac. uncat.	15,089	9,568	63.41	5,521	36.59
1830	R.0110; R.0109	13,393	9,585	71.57	3,808	28.43
1852	R.0636; R.0635	11,418	10,866	95.17	552	4.83
1876		26,870	15,550	57.87	11,320	42.13
1940		56,801	29,178	51.37	27,623	48.63

YAUYOS

1826–36	R.0206; R.0055	14,858	13,563	91.28	1,295	8.72
1851	*Guía . . . 1851*	15,264	13,619	89.22	1,645	10.78
1876		15,075	13,784	91.44	1,291	8.56
1940		26,675	10,161	38.09	16,514	61.91

THE CENSUS OF 1795

The census of 1795, prepared in 1791–95 for Viceroy Gil de Taboada y Lemos, was published as an appendix to Manuel Fuentes' *Memorias de los virreyes* (1859, vol. 6, App. pp. 6–9). The document was signed by José Ignacio de Lequanda, and dated January 10, 1796.[25] It is incomplete for our purposes, for it contains no mention of the provinces of what is today the Department of Puno in southern Peru. These provinces in 1795 were no longer part of the Viceroyalty of Peru, but had passed to the jurisdiction of the Audiencia of Charcas, in the Viceroyalty of Buenos Aires. The census of 1795 is also defective in its tabulations for the northern provinces. The figures for the Intendency of Trujillo are identical with those given about 1788 by Bishop Martínez de Compañón.[26] Otherwise the census appears to have been based upon provincial tax registers similar to those of the period 1826–54.[27]

Although purporting to represent the size of the population of Peru in 1795, the figures of this census are in general closely similar to those of earlier census report dated 1792. This also was prepared for Viceroy Taboada y Lemos by the Inspector General, Jorge Escobedo, whose activity as a tax expert has already been mentioned. Jorge Escobedo's report is public only in an extract by Vargas Ugarte,[28] so that we have to rely on the full figures, classified by race and status, as published by Fuentes.

Table 4 presents the substance of the census of 1795. The political divisions are not the same as those of the early Republic. It therefore seemed advisable to keep the figures for 1795 separate from those of later periods. The political divisions nevertheless are the same as those described by Dr. Cosme Bueno.[29] The work of Dr. Bueno is the basis of our map of late colonial Peru (map 1). It serves to illustrate a number of points, when adjustment is made in respect to later provincial boundary changes.

TABLE 4.—*The census of 1795*

Intendency and Province	Total	Indians	Percent of total	Others	Percent of total
Lima:					
Cercado	62, 910	9, 744	15. 49	53, 166	84. 51
Cañete	12, 616	7, 025	55. 68	5, 591	44. 32
Ica	20, 576	6, 607	32. 11	13, 969	67. 89
Yauyos	9, 574	8, 005	83. 61	1, 569	16. 39
Huarochiri	14, 024	13, 084	93. 3	940	6. 7
Canta	12, 133	10, 333	85. 16	1, 800	14. 84
Chancay	13, 945	7, 500	53. 78	6, 445	46. 22
Santa	3, 334	873	26. 18	2, 461	73. 82
Trujillo:					
Trujillo	12, 031	4, 577	38. 04	7, 454	61. 96
Lambayeque	35, 193	22, 333	63. 46	12, 860	36. 54
Piura	44, 491	24, 797	55. 73	19, 694	44. 27
Cajamarca	62, 196	29, 692	47. 74	32, 504	52. 26
Huamachuco	38, 150	17, 117	44. 87	21, 033	55. 13
Pataz	13, 508	4, 627	34. 25	8, 881	65. 75
Chachapoyas	25, 398	12, 504	49. 23	12, 894	50. 77
Arequipa:					
Arequipa	37, 241	5, 929	15. 92	31, 312	84. 08
Camaná	10, 023	1, 249	12. 46	8, 774	87. 54
Condesuyos	20, 110	12, 011	59. 73	8, 099	40. 27
Collaguas (Cailloma)	13, 905	11, 872	85. 38	2, 033	14. 62
Moquegua	28, 197	17, 272	61. 25	10, 925	38. 75
Arica	18, 726	12, 820	68. 46	5, 906	31. 54
Tarapacá	7, 973	5, 456	68. 43	2, 517	31. 57
Tarma:					
Tarma	34, 911	18, 821	53. 91	16, 090	46. 09
Jauja	52, 286	28, 477	54. 46	23, 809	45. 54
Cajatambo	16, 872	10, 500	62. 23	6, 372	37. 77
Huaylas	40, 822	20, 935	51. 28	19, 887	48. 72
Conchucos	25, 308	9, 899	39. 11	15, 409	60. 89
Huamalíes	14, 234	8, 957	62. 93	5, 277	37. 07
Huánuco	16, 826	7, 598	45. 16	9, 228	54. 84
Huancavelica:					
Huancavelica	5, 146	3, 803	73. 9	1, 343	26. 1
Angaraes	3, 245	2, 691	82. 93	554	17. 07
Tayacaja	13, 161	9, 020	68. 54	4, 141	31. 46
Castrovirreyna	9, 365	8, 385	89. 54	980	10. 46
Huamanga:					
Huamanga	25, 821	20, 373	78. 9	5, 448	21. 1
Anco	2, 022	1, 744	86. 25	278	13. 75
Huanta	27, 337	16, 981	62. 12	10, 356	37. 88
Cangallo	12, 474	10, 011	80. 25	2, 463	19. 75
Andahuaylas	12, 020	5, 000	41. 6	7, 020	58. 4
Lucanas	15, 725	12, 700	80. 76	3, 025	19. 24
Parinacochas	16, 011	8, 475	52. 93	7, 536	47. 07
Cuzco:					
Cuzco	31, 982	14, 254	44. 57	17, 728	55. 43
Abancay	25, 259	18, 419	72. 92	6, 840	27. 08
Aimaraes	15, 281	10, 782	70. 56	4, 499	29. 44
Calca and Lares	6, 199	5, 519	89. 03	680	10. 97
Urubamba	9, 250	5, 164	55. 83	4, 086	44. 17
Cotabambas	19, 824	18, 237	91. 99	1, 587	8. 01
Paruro	20, 236	15, 034	74. 29	5, 202	25. 71
Chumbivilcas	15, 973	11, 475	71. 84	4, 498	28. 16
Tinta	34, 968	29, 045	83. 06	5, 923	16. 94
Quispicanchis	24, 337	19, 947	81. 96	4, 390	18. 04
Paucartambo	12, 973	11, 229	86. 56	1, 744	13. 44
Added total	1, 076, 122	608, 902	56. 58	467, 220	43. 42
Text total	1, 076, 122	608, 894	--------	467, 220	--------

THE CENSUS OF 1836

The census of 1836 was the earliest attempt under Republican government to base a count upon the tax registers (Paz Soldan, 1877, p. XXI). Unfortunately it is valid only for the northern Departments, and not for all provinces there. In the southern Departments the compilation merely repeated the viceregal figures of 1795. The census of 1836 was published only as an appendix to the annual almanacs of the period, without caste classifications, and with immense territorial la-

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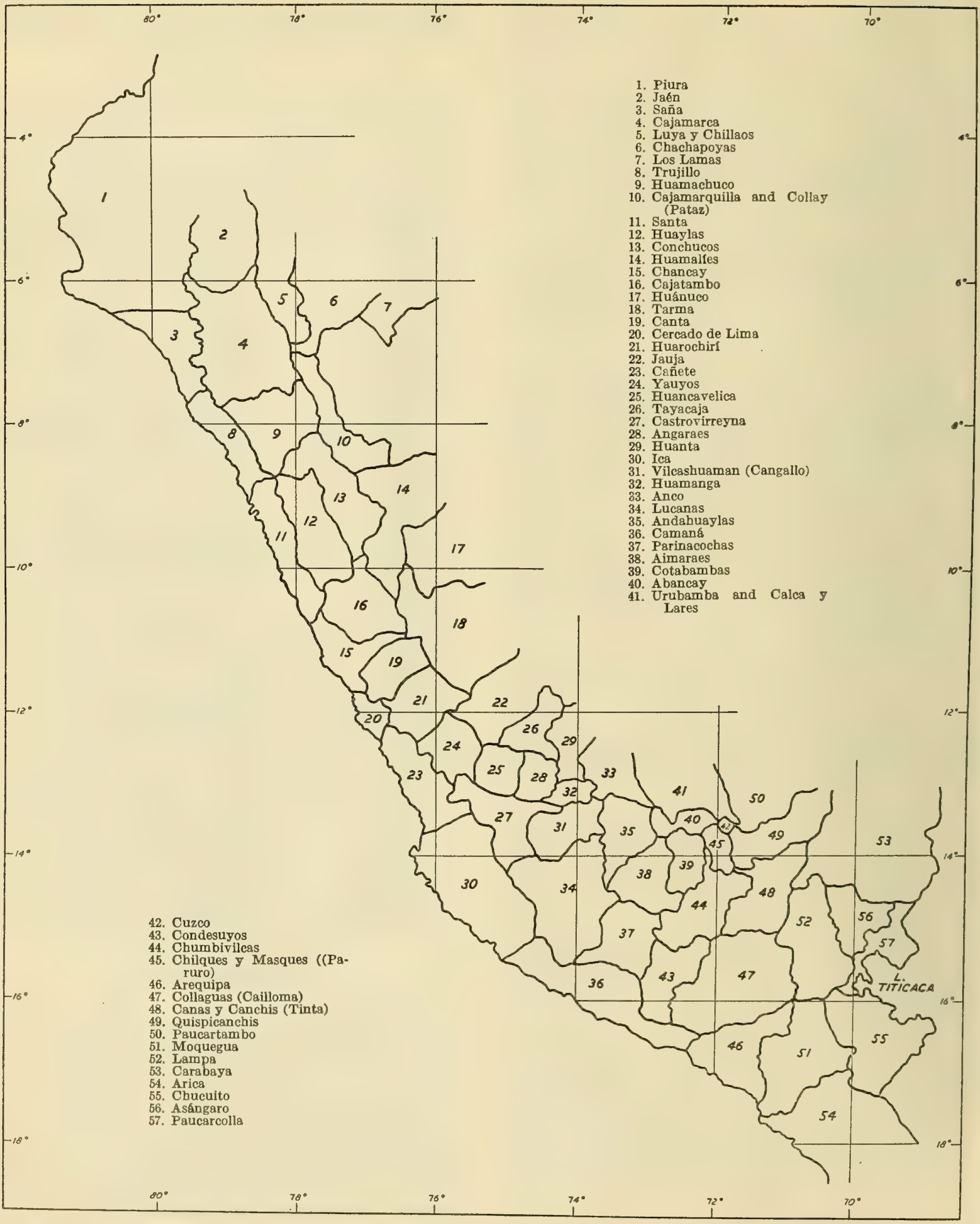
[25] Brief remarks on this census by Arca Parró, in *Censo Nacional*, 1940, vol. 1, p. xxix. On Colonial demographic reports in general, see Fuentes, H., 1917, and Kubler, 1946, pp. 334–340.

[26] MS. in ANB, Martínez de Compañón, Baltasar Jaime. 1782–89. Plate No. 3 is entitled "ESTADO que demuestra el numero de Abitantes del Obispado de Truxillo del Peru con distincion de castas formado por su actual Obispo." The MS. in the Biblioteca del Palacio, Madrid, contains the same table as No. 5 in vol. 1. This table has never been published, although mentioned by Domínguez Bordona, 1936.

[27] Of the tax registers of the late eighteenth century, only one survives to present knowledge. It is preserved in the archive of the Foreign Office in Lima, and relates to the Indian population of Lampa Province in 1797. The report is incomplete. RR. EE. 5–29. "Revisita o Matricula de Indios del Partido de Lampa Jurisdiccion del Gobierno e Intendencia de la Prov^{a} de Puno. Formado por el D. D. José Mariano Clemente Peralta de Peralta y Valdez . . . [Iniciada en 4 de junio de 1797]. Tomo 2."

[28] Vargas Ugarte, 1938, vol. 2, pp. 370–371. Escobedo's figures reappear in another version about 1793, commonly attributed to the traveler Taddeo Haenke (Haenke, 1901). On the incorrect attribution of this work to Haenke, see Vargas Ugarte, 1935, vol. 1, p. 24.

[29] Bueno, 1763–78. (For further bibliographical description of this work, see Schwab, 1948, pp. 35–38.)



Map 1.—Provinces of Peru at the end of the eighteenth century, based on the geographical data by Cosme Bueno, 1763–78, and on the census of 1795.

cunae. To call it a census is to dignify it by an undeserved title. The tax registers themselves are the only reliable material for a census in the period before 1876.

In 1837 Paredes first published the figures for the Departments of what was then called the North Peruvian State, with totals by provinces. The figures are very useful, although detailed racial and geographical classification is missing, for the reason that they supply totals for certain provinces, such as Canta or Piura, for which the tax registers now are missing. Paredes himself, however, was unable to find tax registers for the Province of Trujillo. In their absence, he was obliged to rely upon figures of 1795. As the Province of Maynas was demographically unknown in 1837, Paredes was unable to supply any current figures for its population (Paredes, 1837, pp. 115–116).

Figures for the southern Departments were published in an almanac of 1842 (Carrasco, p. 29). Another version of these figures appeared a year earlier in 1841,[30] but it was incomplete and contradictory in certain points with the figures of 1842 (see table 5).

The figures for the whole Republic, when compared, are unreliable. Table 6 shows that the figures for the southern Departments and for Trujillo Province are merely the old figures of 1795, and that they bear no relation to the Republican tax registers.

To the student in 1837 these figures gave some measure of the failure of 16 years of Republican government to achieve the prosperity and abundance that had been promised on the morrow of Independence. In 1826, Paredes had access only to the figures of the census of 1795. Upon contemplating them he wrote (Paredes, 1828):

TABLE 5.—*Data from almanacs, 1837–42 (entire populations)*

Department and Province	Calendario y Guía . . . 1837	Calendario y Guía . . . 1841	Calendario y Guía . . . 1842
Amazonas	35, 991	----------	71, 267
Chachapoyas	18, 426	----------	----------
Mainas	----------	----------	----------
Pataz	17, 565	----------	----------
La Libertad	216, 244	----------	216, 064
Cajamarca	41, 993	42, 762	----------
Chota	15, 438	----------	----------
Huamachuco	43, 058	----------	----------
Jaén	6, 706	----------	----------
Lambayeque	43, 202	----------	----------
Piura	53, 815	53, 815	----------
Trujillo	12, 032	----------	----------
Lima	151, 718	----------	151, 718
Canta	13, 932	----------	----------
Cañete	13, 892	----------	----------
Chancay	18, 712	----------	----------
Huarochirí	16, 549	----------	----------
Ica	18, 031	----------	----------
Lima	58, 326	65, 116	----------
Yauyos	12, 276	----------	----------
Junín	144, 243	----------	144, 243
Cajatambo	18, 464	----------	----------
Huamalíes	13, 172	----------	----------
Huánuco	14, 534	----------	----------
Jauja	61, 023	----------	----------
Pasco	37, 050	----------	----------
Huaylas (Ancash)	121, 462	----------	121, 462
Conchucos Alto	25, 091	----------	----------
Conchucos Bajo	44, 110	----------	----------
Huaylas	49, 667	----------	----------
Santa	2, 594	----------	----------
Ayacucho and Huancavelica	----------	----------	159, 608
Cuzco	----------	----------	216, 382
Puno	----------	----------	156, 000
Arequipa and Tacna	----------	----------	136, 812
Total	----------	----------	1, 373, 736

TABLE 6.—*The census of 1795 and the census of 1836 (entire populations)*

Department	1795	1836
Lima	149, 112	151, 718
Ayacucho	159, 608	159, 608
Cuzco	216, 382	216, 382
Arequipa	136, 812	136, 812
Junín	200, 839	144, 243
Libertad	230, 970	216, 244
Puno	156, 000	156, 00

> En los 32 años corridos desde 1795, ha debido doblarse por lo menos la poblacion, si se considera que en todo ese tiempo no ha sufrido el Peru hambres, pestes, ni otras plagas de la naturaleza, y que en compensativa de la guerra que hace 16 años, tambien ha disfrutado, ha mas de 19, del beneficio de la vacuna, y otros que favorecen el incremento de la poblacion. Si practicado el nuevo censo, resulta estacionaria o tal vez disminuida, sera la prueba mas palmaria del Gobierno homicida que nos rijio hasta la independencia.[31]

(In 32 years elapsed since 1795, the population should have doubled at least, if it be taken into account that in all this time Peru has not suffered famine or pest or the other plagues of nature. In addition, and to compensate for the war of 16 years ago, Peru has also enjoyed for over 19 years the benefit of vaccination, and other benefits that favor the increase of population. When the new census has been taken, if the population has been stationary or even diminished, it will be the most flagrant proof of the homicidal character of the Government that ruled us until Independence.)

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[30] Ed. Carrasco, 1841. The relevant information is tabulated here, for comparison with the figures published in 1842. We have used it again in the table by provinces, where Carrasco's material can be used to eke out the gaps in the tax register file (table 3).

	Total	*Whites*	*Indians*
P. 60, Prov. Lima, census of 1836	65, 116	21, 474	9, 690
P. 129, Prov. Cajamarca	42, 762	-------	22, 787

[31] Language denouncing the Colonial regime is a commonplace in the tax collectors' reports of this period.

The comparison of table 6 leaves the question equally divided between the Colonial and Republican regimes:

Territory:	1795	1836	Increase (percent)
Junín and Huaylas	200, 839	265, 705	24. 5
Libertad and Amazonas	230, 970	252, 235	8. 3
Lima	149, 112	151, 718	1. 5
Total	580, 921	669, 658	13. 25

In 41 years the increase in these northern departments fell far below the anticipated doubling. To the defenders of the Colonial regime, Republican government had failed; to Republicans, the Colonial regime had burdened them with its depletion of the human resources of the country.

THE CENSUS OF 1850

The census of 1850 was prepared by the Ministry of War upon the basis of the tax registers since 1826. Its purpose was to buttress a presidential decree ordering the recruitment of fresh troops of infantry and cavalry for impending hostilities with Bolivia (El Peruano, 1850, vol. 23, p. 141). The census was first published together with the decree ordering the levy of new troops on the basis of recruits per thousand population. The census is dated April 25 and the decree April 27.[32] One week later a corrected version of the census appeared, claiming to include foreigners and slaves, with corrections based upon the most recent registers. The revision raised the total population of the Republic beyond two million, and permitted the Government to publish a figure pushing up the number of recruits per thousand inhabitants.[33]

Table 7 shows both original and corrected figures as published.

TABLE 7.—*The census of 1850 (entire populations)*

Department and Province	Apr. 25, 1850	May 4, 1850
Amazonas	39, 074	----------
Chachapoyas	27, 728	----------
Mainas	11, 346	----------
Ancash	155, 779	----------
Huari	38, 638	----------
Huaylas	69, 077	----------
Santa	5, 349	----------
Conchucos	42, 715	----------
Ayacucho	129, 921	130, 070
Andahuaylas	19, 184	----------
Cangallo	20, 027	20, 176
Huamanga	29, 617	----------
Huanta	26, 358	----------
Lucanas	15, 401	----------
Parinacochas	19, 334	----------
Arequipa	121, 585	135, 361
Cercado	50, 040	63, 816
Camaná	11, 270	----------
Cailloma	23, 446	----------
Condesuyos	21, 170	----------
Unión	15. 659	----------
Cuzco	346, 211	----------
Abancay	21. 912	----------
Anta	22, 980	----------
Aimaraes	18, 228	----------
Cercado	41, 152	----------
Calca	14, 223	----------
Canas	37, 605	----------
Canchis	32, 106	----------
Chumbivilcas	22, 050	----------
Cotabambas	23, 241	----------
Paruro	17, 732	----------
Paucartambo	17, 206	----------
Quispicanchis	49, 416	----------
Urubamba	28, 360	----------
Huancavelica	76, 118	----------
Angaraes	17, 301	----------
Cercado	17, 318	----------
Castrovirreyna	14, 348	----------
Tayacaja	27, 151	----------
Junín	245, 722	----------
Cajatambo	24, 799	----------
Huamalíes	32, 027	----------
Huánuco	28, 189	----------
Jauja	89, 796	----------
Pasco	70, 911	----------
La Libertad	202, 662	261, 553
Cajamarca	46, 122	----------
Chiclayo	25, 133	----------
Chota	62, 597	----------
Huamachuco	11, 417	60, 854
Jaén	7, 560	----------
Lambayeque	22, 682	----------
Pataz	19, 940	29, 394
Trujillo	7, 211	----------
Lima	180, 923	----------
Cercado	85, 116	----------
Canta	14, 384	----------
Cañete	15, 553	----------
Chancay	23, 428	----------
Huarochiri	14, 258	----------
Yauyos	15, 264	----------
Ica	12, 920	----------
Moquegua	61, 440	----------
Arica	18, 642	----------
Cercado	32, 380	----------
Tarapacá	10, 418	----------
Puno	245, 681	286, 148
Asángaro	54, 333	----------
Carabaya	22, 138	22, 605
Chucuito	35, 957	75, 957
Huancané	56, 765	----------
Lampa	76, 488	----------
Callao	8, 352	----------
Piura	74, 372	----------
Total Republic	1, 887, 840	2, 001, 123

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[32] El Peruano, 1850, vol. 23, p. 141, "El anterior Censo es sacado de las ultimas matriculas que existen archivadas en la Direccion Jeneral de Hacienda. Lima a 25 de Abril de 1850. Buenaventura Seoane, Oficial Mayor del Ministerio de Guerra y Marina."

[33] El Peruano, 1850, vol. 23, No. 37, 4 May, p. 144. "Censo rectificado de la Republica. El anterior Censo, en el que no estan incluidos los extranjeros ni los esclavos, ha sido sacado y rectificado conforme a las ultimas matriculas que existen archivadas en la Direccion Jeneral de Hacienda. Lima a 4 de Mayo de 1850. B. S."

Ibid., "Circular a los Prefectos y Gobernadores litorales . . . Habiendo llegado algunas matriculas despues de formado el censo . . . y . . . resultando . . . haber . . . 2001123 almas y caber un recluta por cada fraccion de 1287 [scale of recruitment altered from former rate of 1214 persons per recruit] . . . Pedro Cisneros."

On Early Republican army recruitment, see Lavandais, 1851; Bowen, 1861, p. 230; Basadre, 1929, vol. 1, p. 99; Saenz, 1933, p. 170; Beals, 1934, p. 377.

THE CENSUS OF 1862

The only detailed figures of this census that have been published, appeared in 1877.[34] Paz Soldan used the data of 1862 for virtually all demographic matters, excepting the general tables in the article "Peru." These tables were based upon the census of 1876, which became available to Paz Soldan as his work went to press. Because the count of 1862 lacks classification by caste, its figures cannot be used here.

THE CENSUS OF 1876

Arca Parró has published a brief study of the value of this head count (Peru: Censo Nacional, 1944, vol. 1, pp. XXXI–XXXIII). In the provinces the census was directed by Army officers. In Lima the work was under the direction of the French statistician, Georges Marchand. The results were published by Manuel Atanasio Fuentes (Peru: Censo General, 1878). Many critics have pointed to the negligence of officials who omitted the count through indolence in settlements of considerable size, and to the defective methods of questioning that were used. On the other hand, the census was the first rigorous effort, to count the population, and it was a document that profoundly affected later governmental policy in respect to demographic questions.

For our purposes the census is valuable because it yields approximate measures of caste in 1876. The published tables by district, province, and Department include a classification according to white, mestizo, Indian, Negro, Asiatic and other races. The territorial adjustments to earlier geographical divisions can in all cases be made without gross errors. Table 8 gives the provincial

TABLE 8.—*The census of 1876*

Department and Province	Total	Indians	Indian percentage
Ancash:			
Huari	59, 766	20, 152	33. 72
Huaraz	58, 317	34, 923	59. 88
Huaylas	51, 506	27, 412	53. 22
Cajatambo	31, 036	20, 399	65. 73
Pallasca	22, 625	7, 016	31. 01
Pomabamba	42, 941	17, 306	40. 3
Santa	18, 639	5, 584	29. 96
Amazonas:			
Bongará	3, 344	2, 882	86. 18
Chachapoyas	16, 894	7, 725	45. 73
Luya	14, 046	7, 594	54. 07
Apurimac:			
Abancay	16, 449	8, 226	50. 01
Andahuaylas	48, 100	26, 167	54. 4
Antabamba	7, 144	3, 388	47. 42
Aimaraes	18, 186	7, 055	38. 79
Cotabambas	28, 646	19, 845	69. 28
Arequipa:			
Arequipá	59, 696	18, 273	30. 61
Camana	15, 675	2, 237	14. 27
Castilla	23, 480	11, 004	46. 87
Arequipa—Continued			
Cailloma	19, 264	16, 601	86. 18
Condesuyos	11, 099	7, 246	65. 29
Islay	8, 533	1, 502	17. 6
La Unión	19, 299	11, 193	58.
Ayacucho:			
Cangallo	21, 356	18, 231	85. 37
Huamanga	31, 237	26, 468	84. 73
Huanta [1]	15, 322	7, 560	49. 34
La Mar	24, 144	15, 696	65. 01
Lucanas	23, 852	17, 056	71. 51
Parinacochas	26, 304	17, 816	67. 73
Cajamarca:			
Cajabamba	19, 168	8, 501	44. 35
Cajamarca	55, 559	22, 808	41. 05
Celendín	13, 602	1, 802	13. 25
Contumasa	13, 377	3, 120	23. 32
Chota	51, 016	15, 595	30. 57
Hualgayoc	47, 298	15, 814	33. 43
Jaén	12, 726	6, 166	48. 45
Callao: Callao	34, 492	8, 228	23. 85
Cuzco:			
Acomayo	17, 567	14, 334	81. 6
Anta	21, 668	15, 282	70. 53
Calca	14, 086	11, 017	78. 21
Canas	35, 866	33, 720	94. 02
Canchis	35, 482	30, 366	85. 58
Convención	10, 189	6, 944	68. 15
Cuzco	23, 108	9, 455	40. 91
Chumbivilcas	17, 128	15, 568	90. 89
Paruro	16, 800	9, 921	59. 05
Paucartambo	14, 086	12, 211	86. 69
Quispicanchis	20, 371	15, 480	75. 99
Urubamba	16, 681	8, 606	51. 59
Huancavelica:			
Angaraes	26, 464	17, 794	67. 24
Castrovirreyna	14, 802	14, 686	99. 22
Huancavelica	23, 642	21, 345	90. 28
Tayacaja	38, 161	27, 102	71. 02
Huánuco:			
Dos de Mayo	22, 791	14, 491	63. 58
Huamalíes	21, 589	8, 952	41. 47
Huánuco	34, 611	23, 798	68. 76
Ica:			
Chincha	30, 284	16, 912	55. 84
Ica	29, 971	16, 176	53. 97
Junin:			
Huancayo	60, 236	35, 848	59. 51
Jauja	59, 697	31, 413	52. 62
Pasco	44, 796	33, 404	74. 57
Tarma	45, 030	28, 810	63. 98
Lambayeque:			
Chiclayo	34, 437	17, 899	51. 98
Lambayeque	52, 301	30, 700	58. 7
La Libertad:			
Huamachuco	39, 827	13, 062	32. 8
Otuzco	29, 938	8, 773	29. 3
Pacasmayo	15, 768	5, 637	35. 75
Pataz	29, 244	19, 763	67. 58
Trujillo	32, 559	10, 622	32. 62
Lima:			
Canta	16, 650	14, 978	89. 96
Cañete	22, 244	14, 524	65. 29
Chancay	36, 440	17, 903	49. 13
Huarochirí	14, 397	13, 027	90. 48
Lima	120, 994	26, 414	21. 83
Yauyos	15, 075	12, 918	85. 69
Loreto:			
Alto Amazonas	7, 756	6, 969	89. 85
Bajo Amazonas	9, 632	7, 330	76. 1
Huallaga	26, 921	12, 534	46. 56
Moyobamba	17, 596	2, 916	16. 57
Moquegua: Moquegua	28, 785	19, 041	66. 15
Piura:			
Ayabaca	35, 576	17, 664	49. 65
Huancabamba	17, 985	12, 883	71. 63
Paita	21, 077	8, 442	40. 05
Piura	55, 099	39, 455	71. 61
Tumbes	5, 878	1, 348	22. 93
Puno:			
Asángaro	46, 338	43, 710	94. 33
Carabaya	11, 221	9, 856	87. 84
Chucuito	42, 353	40, 183	94. 88
Huancané	44, 525	42, 860	96. 26
Lampa	44, 811	40, 563	90. 52
Puno	57, 480	51, 125	88. 94
Sandia	12, 721	10, 864	85. 40
Tacna:			
Arica	9, 041	4, 086	45. 19
Tacna	19, 245	10, 572	54. 93
Tarata	7, 723	7, 149	92. 57
Tarapacá: Tarapacá	38, 225	16, 686	43. 65

[1] Another estimate in the same text section gives 30,479 inhabitants, but without indicating "racial" subtotals.

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[34] Paz Soldan, 1877, pp. xxii, 740. The total for the Republic was 2,487,916.

figures, reduced to total populations, and Indian percentages of the whole populations, in terms of the provincial divisions of 1876. The figures of table 8 are recombined as necessary for comparison with earlier or later periods, in the other tables and maps of this report.

THE CENSUS OF 1940

A detailed critique of the misleading "racial" concept according to which the census of 1940 was completed, has been published by John Rowe (1947, pp. 202–215). It is a critique that seeks to establish a more rigorous cultural definition of the Indian than the one used in the census. The truth remains, however, that recent Peruvian administrative policy follows the figures on Indians as published in the volumes of the census. The political reality of Indian problems today rests upon these figures. For our purposes they are valuable in their published form and without Rowe's corrections, for the simple reason that they describe caste status in Peru, as recorded by thousands of census takers, and as admitted by the subjects to whom the question concerning "race" was addressed. In this sense, the head count of 1940 is exactly comparable to the census of 1876, with its identical confusion between "race" and caste. Both enumerations tabulate and quantify a general social attitude toward caste, under the misleading name of "race." The figures themselves are fully published in the census report of 1940 (Peru: Censo Nacional, 1944–49). The percentages of Indian population are published by province in Rowe's article (his table 1), which we therefore do not reproduce here.[35] The census does not publish separately the figures for whites and mestizos, which appear together under the common heading as "raza blanca y mestiza."

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[35] On Rowe's map, 1947, fig. 1, Yauli and Pasco; Huari and Huaylas Provinces are interchanged, as in the erroneous *Censo Nacional* maps of 1940.

THE COMPOSITION AND DISTRIBUTION OF THE PERUVIAN PEOPLE, 1795–1940

In Peru the quantitative relationships between Indian and non-Indian groups have long been governed by the processes of caste formation and caste recruitment. "Racial" criteria intervene only by verbal confusion, when the biological terms of everyday usage, such as "Indian" and "mestizo," are made to perform double duty as terms denoting caste status. Throughout the past century and a half in Peru, people have said "Indian" when they meant "rural proletariat." They said "mestizo" when they meant the small farmer, the artisan, the industrial laborer, or the member of other low-income groups not attached to the land.[36]

An excellent text to illustrate these verbal confusions may be taken from the last years of the Colonial regime in Peru. Dated 1819, it appears in a manuscript[37] that survived the fire of the National Library in Lima in 1943. The manuscript contains, among other materials bearing upon the *tributo de indios*, three pages written by one Dionisio Farfán, who was the tax collector of the province of Chachapoyas in 1819. The text of this *informe* apparently was composed to accompany the *matrícula de indígenas* compiled by Farfán. It was received at the *Contaduría General* in Lima on September 15, 1819.

After noting that he had registered more Indian tributaries than his predecessors, Farfán commented upon the difficulties of distinguishing between Indians and mestizos. The passage clearly indicates his perplexity in trying to adhere to any "biological" concept of race.

> Y este aumento habria sido mas considerable si hubiera podido numerar muchos individuos que pasan por Mestiços y se [re]nunciaron por de clase Indica, pero aunque realmente son Cholos, segun sus aspectos, era tal el exfuerso con que defendieron su libertad, para substraerse del Empadronamiento, negando u obscureciendo con el propio fin su verdadera calidad, q no hubo arbitrio de comprehenderlos.
>
> (This increase would have been greater if I had been able to count many persons who pass as mestizos, having renounced their Indian status. Although these are really Cholos, according to appearances, they defended their freedom with such effort, to escape being registered, by denying or concealing their true quality for this purpose that there was no way of including them.)

Farfán here introduces the concept of the Cholo, whom he apparently regards as intermediate between the Indian and the mestizo. The next paragraph of his *informe* gives further light on the term.

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[36] On whites, see p. 5, footnote 12.

[37] MS. in BNL, uncataloged. "Instruccion de Matriculas de Indios por [Julian] Orodea [de la Cuesta]. Grãl 605. 1820." 27 fos.

> Se dice Mestiço el descendiente de Padre de esta casta aunque la Madre sea India, o vice versa, quando verdaderam^{te} son Cholos.
>
> (A man calls himself a mestizo as the son of a father of this caste, although his mother be Indian, or vice versa, when in truth such people are Cholos.)

Farfán implies that the true mestizo was at least half white; and that any smaller fraction of white parentage classified the individual as a Cholo. Farfán also comments upon the growing number of non-Indian people in his jurisdiction, and upon the insoluble technical problem of discriminating clearly between the "races" in his time.

> Inquirir sus generaciones fue una ocupacion bien fastidiosa, en medio de la dificultad de conseguirlo. Porq hay muchos Interesados en que los Cholos sean fixos, y grande el numero de los que pasan por Mestizos no siendolos: libros de tributo para el Rey . . . Los Cholos se hallan considerados por Mestiços, y era ocio [so] el recurso a los libros Parroquiales, para hallarse con la Partida de Baptismo algun Comprobante de la calidad del Individuo. Asi eran y son los Libros y los Curas . . . testigos ineptos para descubrir y comprobar la verdad.
>
> (To verify people's ancestry was a most tedious occupation, given the difficulty of getting the truth. Many interested parties have a stake in keeping the Cholos settled. And a number of Cholos, who pass as mestizos exempt from royal tribute, are not mestizos. But the Cholos are regarded as mestizos. It is futile to consult parish registers, in the hope of finding some evidence as to the quality of the person together with his baptismal entry. Both the registers and the priests are inadequate witnesses for discovering and proving the truth.)

Farfán implies that he would like to class the Cholos as tribute-paying Indians, by regarding as Indian every person in whom he could prove less than one-half white ancestry.

The tax registers between 1826 and 1854, however, resolved the problem by an honest verbal device. Instead of referring to the non-Indian groups by misleading racial tags, such as appear in the census of 1876 and in 1940, the *apoderados fiscales* nearly always enumerated the non-Indian lower-income groups as *castas*. This term, which literally signifies "the castes," fully conveys the status-bound character of these groups. Occasionally an *apoderado fiscal* adhered to the usage of the province in which he was employed, and reverted to pseudobiological words, as in Yauyos Province in 1826, when the non-Indians were registered as *mistos*, or "mixed breeds."[38] In Huamachuco Province in 1826, the *apoderado* labeled the Indians as Cholos, which also imposes a biological definition upon a caste.[39]

Occasionally a tax collector recorded an incident or an observation that reveals to what extent caste distinctions were elastic. For example, the *apoderado* for 1846 in Jauja Province recalled that during the War of Independence, the royalist troops in Jauja had used the parish registers to make cartridges. The *apoderado* observes that for this reason, "many who used to be Indians, have been transferred into *castas*." [40]

In 1845 in the Province of La Unión, an *apoderado* named Gregorio Cornejo reported with profound insight upon the caste situation, in words that hold for the present and for the future of the Peruvian "racial" problem: [41]

> . . . es probable que se extinga [la clase indígena] en algunos pueblos . . . por que los Indigenas, se estan casando con Mestizas, cuyos hijos siguiendo la condicion de sus madres dejan de perteneser a esa clase.
>
> (It is likely that the Indian class will disappear in some towns . . . for the Indians are marrying the mestizo women, whose children, by adopting the status of the mothers, cease to belong to the Indian class.)

CASTE MAJORITIES

Maps 2, 4, 6, 8, 10 display the regions of Peru in respect to the dominant "racial" group, in 1795, in 1826/54, in 1876, and in 1940. The shaded portions show provinces with non-Indian majorities of 50 percent or greater; and the unshaded areas indicate Indian majorities greater than 50 percent. Maps 1, 3, 5, and 7 display the boundaries of the provinces and their nomenclature at the same moments in time.

To show the distribution of percentages in more detail seems unprofitable, given the incompleteness of the record.[42] It is likewise of little value to treat the "races" other than as Indian and non-Indian. By Indian we have here accepted the census taker's or the tax collector's judgment of who is an Indian, for it is with social attitudes toward race, rather than with scientifically descriptive concepts of race that this paper deals.

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[38] MS. "Revisita de Mistos de la Provincia de Yauyos, Dep. de Lima," AHMH, R.0055. 57 fos.

[39] MS. "Libro primero, y Duplicado de Contribucion de Indigenas, de la Provincia de Huamachuco, que comprehende la Capital de su Nombre, y sus Doctrinas de Sartinbamba, Cajabamba, Marcabal, y Amarcucho, que empeso a correr desde 1º de Julio de 1826." AHMH, R.0054. 280 fos.

[40] MS. "Matricula de Indigenas de la Provincia de Jauja, Dpto. de Junin," AHMH, R. 0349. 223 fos. The *informe* on p. 14 is signed by the collector, Mario Linas, and dated 1846. P. 5: ". . . muchos que han pertenecido a Indijenas, han sido convertidos en Castas . . ."

[41] MS. "Matricula Gral. de Indigenas de la Provincia de la Union Dep. de Arequipa," AHMH, R. 0340. 162 fos.

[42] Complete percentage maps of "racial" distribution for 1940 are available in Rowe, 1947, figs. 2–4.

The popular attitude toward "racial" statistics, and the attitude of the governing group are determined not by biological standards of race, but by other factors. The chief of these concerns the self-identification of people who are being counted. They may or may not allow themselves to be called Indians, mestizos, or whites. The official taking the count, on the other hand, must in each case, given the extant attitudes toward race, form a judgment about the race of the individual before him. The aggregate of these attitudes and judgments, as reported to the Government and public, affects the prevalent attitude toward "race."

The same observation holds for non-Indian "races." For all practical purposes Peru is inhabited by Indians and non-Indians. Of the latter, the mestizos form the great majority, with small groups of Caucasians, Asiatics, and Negroes. Through four centuries of population mixture, these latter groups have so thoroughly been mixed into the Peruvian gene pool that it is no longer possible or meaningful to discriminate among the crosses. In 1940 the identifiable Negroes, Asiatics, and others numbered but 1.1 percent of the Peruvian population.[43] White and mestizo, representing 52.89 percent, could not be separated by the census takers, so that these two categories were enumerated together as one. Our practice is to enumerate all "races" other than Indian as non-Indian. In the main, non-Indians may be taken as equivalent to mestizo. The term "mestizo" here has only a caste meaning, and no biological meaning.

It must be repeated that we are dealing, not with biological race, but with social attitudes toward race. Far more appropriate than "race" are the terms of Indian and non-Indian *castes*. Again, we are not dealing with objectively measured magitudes, but with social approximations to the relations between the castes that are real because they are desirable to the governing group and with the tacit or passive permission of the governed groups.

Between 1795 and 1940, radical changes altered the geographical distribution of Indians and non-Indians. In 1795 an Indian world surrounded the non-Indian enclaves (map 2). These are surprising by their extent and unity, but on the whole they were still enclaves. In 1940 the non-Indian occupation of Peru (map 8) may be compared to a sea of lowland mestizo settlers encircling the mountainous island of Indian settlement on central and southern Peru. That this figure of speech holds only for static percentages will shortly be evident.

DISTRIBUTION IN 1795

In 1795 Indians were a minority in the area from the Rio de la Fortaleza to the Pacasmayo Valley, and from this coastal zone into the highlands as far as the Province of Huánuco, and northward to Jaén Province (maps 1, 2). A second great block of non-Indian majority appears on the south coast, from Pisco to Arequipa. Indian majorities are recorded for all the rest of Peru, excepting Lima and Cuzco Provinces, and Andahuaylas. The reasons for an Indian minority in Andahuaylas are nowhere explicit, for the tax collectors' reports on the economic condition of the province have not been discovered. After 1795, and to the present, Andahuaylas shows Indian majority at all times.

Huánuco also presents this problem of an area that shows non-Indian majority only at the end of the Colonial era, and then reverts to Indian dominance. In the case of Huánuco Province, which straddles the main north highland entrances to the Peruvian montaña, the territory was opened to settlement only late in the eighteenth century by non-Indian enterprise. With advancing isolation, these original settlers reverted during the nineteenth century to Indian status as farmers and villagers cut off from the main centers of Republican life. Huánuco may offer an eighteenth-century parallel to the twentieth-century phenomenon of the thinly settled montaña provinces, of which the counted population is today predominantly non-Indian. If their development be retarded, as in the vicinity of Satipo, it is not unlikely that another generation will count them as predominantly Indian again.

The viceregal census of 1795 needs careful study. We here use its figures as they stand, for the reason that much Republican policy was based upon them. Since the figures were socially significant, their absolute objectivity may be disregarded. It seems clear that the late Colonial era manifested an attitude far more inclined to

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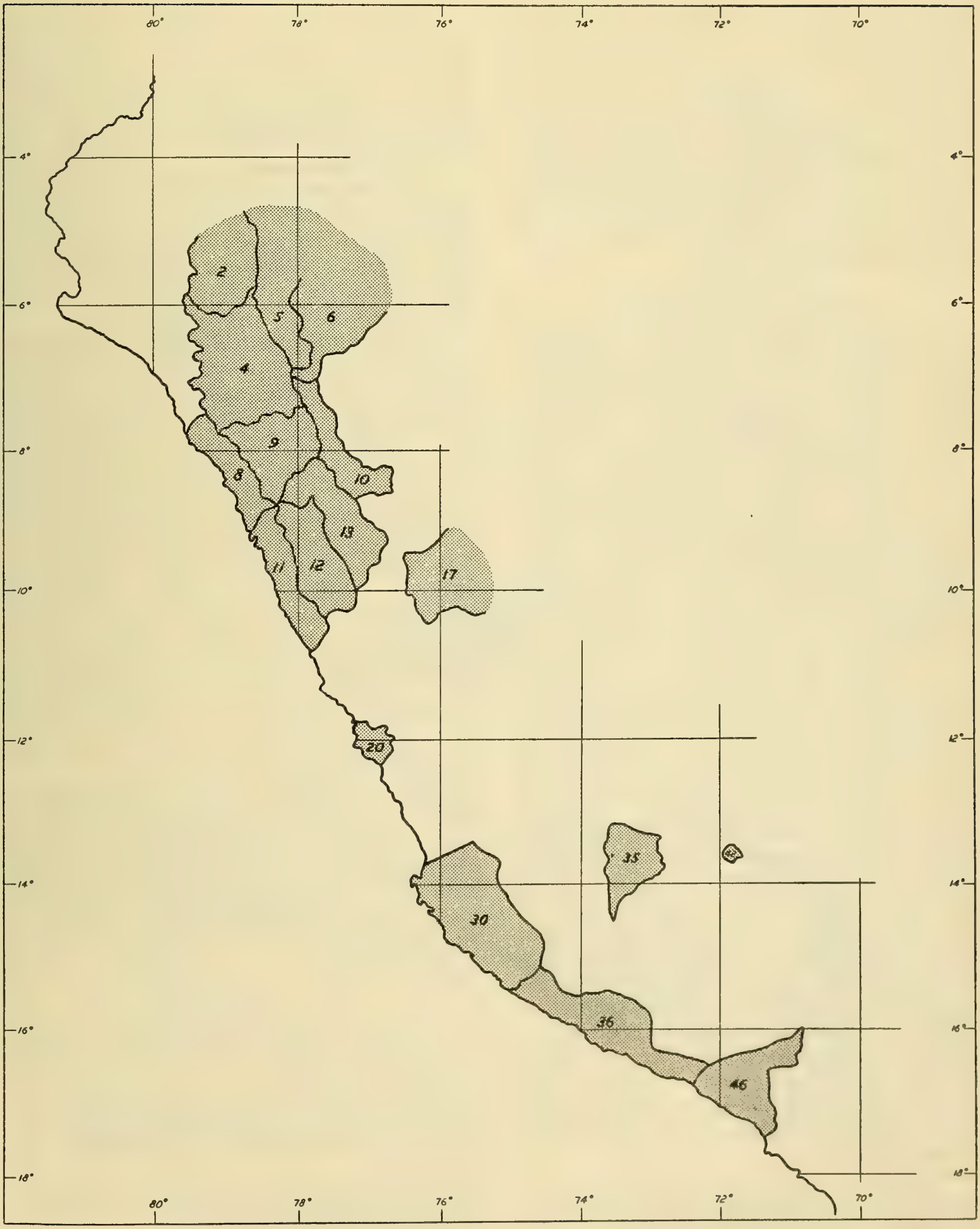
[43] In 1876 their total came to 3.84 percent (103,776 in a total population of 2,699,106). The diminution in their percentage testifies to *mestizaje*.



Map 2.—Areas with less than 50 percent Indian population in 1795.

favor the statistical definition of a large non-Indian population than was the case during most of the nineteenth century. In how far this permissive attitude toward population mixture was the result of the Indian rebellions of the 1780's, is a question needing study. Among the after-effects of the Rebellion of 1780 was an intensified campaign to obliterate the historical tradition of Indian cultural autonomy. The figures of the census of 1795 may reflect this campaign of the "de-Indianization" of Peru.[44]

DISTRIBUTION IN 1826–54

The map for 1826–54 is incomplete (maps 3, 4). Figures for several provinces are altogether lacking in this period. Nevertheless the northern highland is completely documented. A striking reversion to Indian majority appears in Cajamarca Province, in Conchucos, and in Huaylas. These areas of renewed Indian majority tended to break the older mestizo block, as reported in 1795, into three fragments, centering in Jaén-Chota, Trujillo-Santa, and in Huamalíes. This last province was Indian in 1795, with almost 63 percent counted Indian inhabitants. In 1826–54 the Indian percentage dropped to 46.64 percent. The provincial tax collector in 1842 lamented the disintegration of the economic life of the province, the moral decay of the citizenry, and the alarming degeneration of the standard of living since 1800.[45] The tax collector was unable to raise tribute from all the Indians in his district, and so reported collections mainly from the mestizos. Hence the socially effective population was not Indian but mestizo. The case suggests that as isolation and economic decline overtook a province, the Indian caste was the first to disappear from the scene of social cooperation. As the Indians dispersed beyond control by the state, the residual non-Indians appeared to hold the majority, but ultimately, as in Huamalíes Province by 1940, reverted to minority when the dispersed Indian farming populations once again became socially available. By the same token of isolation and economic decline, the non-Indian settlers of one generation lost caste and reverted to Indian status in a later generation.

In Conchucos the collector lamented the devastation of the province by Republican troops, and the decay of domestic markets for provincial produce, owing to the flooding of the economy by foreign imports.[46] Here again, economic decay and progressive Indianization may be related, as in Huánuco and Huamalíes. In Huaylas, disease, war, and governmental exploitation were blamed by the collector for the decay of the province. Indianization here too during the period 1826–54 was notable, in contrast to the non-Indian majority that occupied the province at the end of the Colonial era.

For the south coast our figures from 1826 to 1854 are incomplete, especially in Camaná, Condesuyos, Arequipa, and Moquegua. In Parinacochas, however, the non-Indian majority of 47.07 percent in 1795 shifted to a majority approaching 65 percent by 1854. The tax collector observed in 1847 that heavy taxation and economic distress among the Indians had depleted the province through emigration to other areas.[47] The mestizos left behind were of course more numerous relative to the Indians than before. Parinacochas has never again shown mestizo majority. As in the north, economic decline stimulated Indian dispersal, mestizo impoverishment, and finally the reidentification of the population toward 1876 as a predominantly Indian population, probably by loss of caste among the remaining mestizo settlers.

In general, changes in caste majority between 1826 and 1854 appear to be related to the alarming economic decline of early Republican government. The Indians dispersed, and the mestizos gradually lost caste. But for a brief period, the non-Indian inhabitants held the majority, as in Huánuco, Huamalíes, and Parinacochas, where it fell to them by default.

DISTRIBUTION IN 1876

The economic disorders of Peru were arrested after 1850 by a variety of new situations, such as the guano export industry, the building of the railroads, and by unaccustomed political tranquillity, if only at intervals. The census of 1876,

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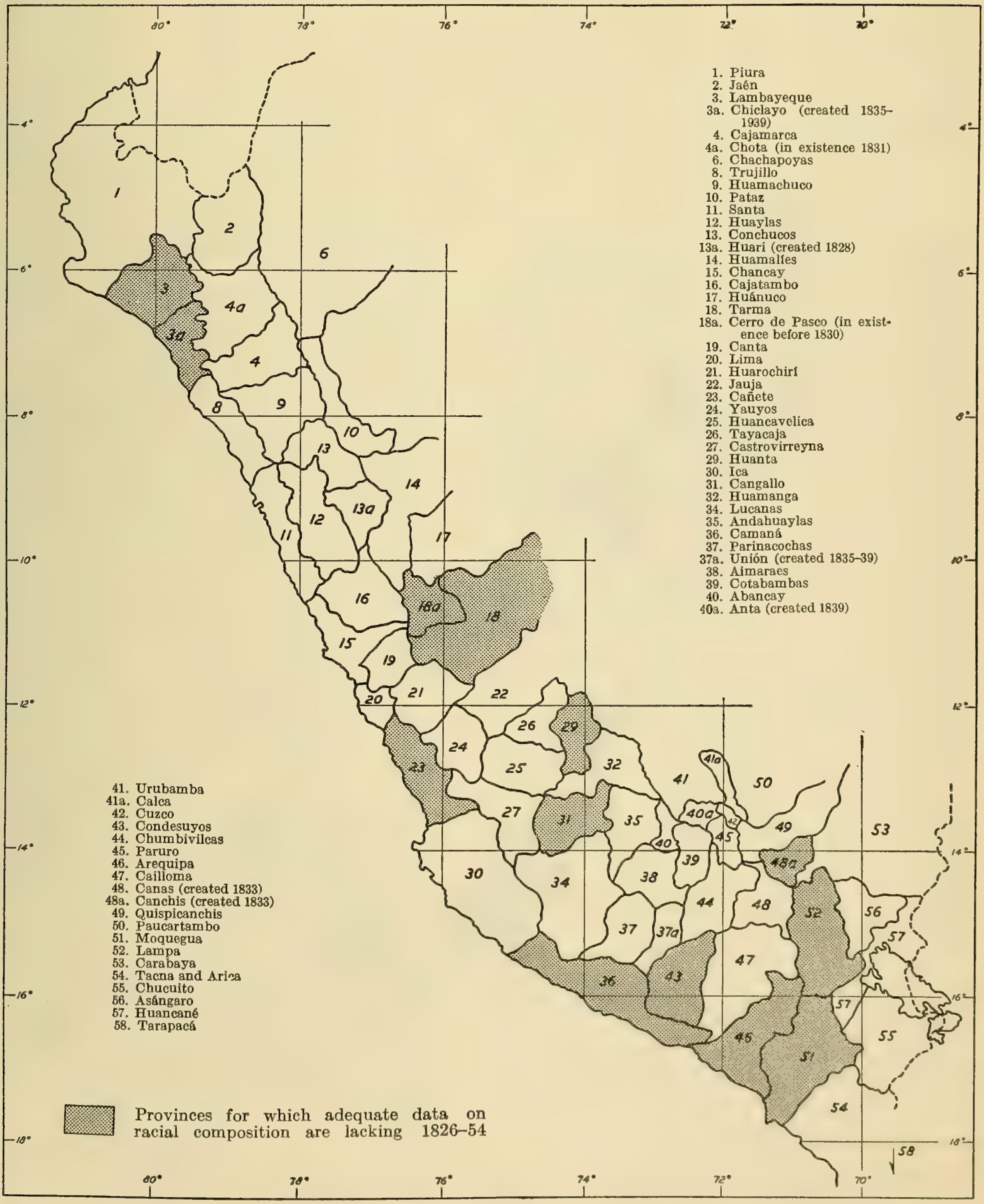
[44] See *Memorias*, 1859, vol. 5, p. 172, on abolition of the traditional Indian ceremonial offices and duties under Viceroy Teódoro de Croix.

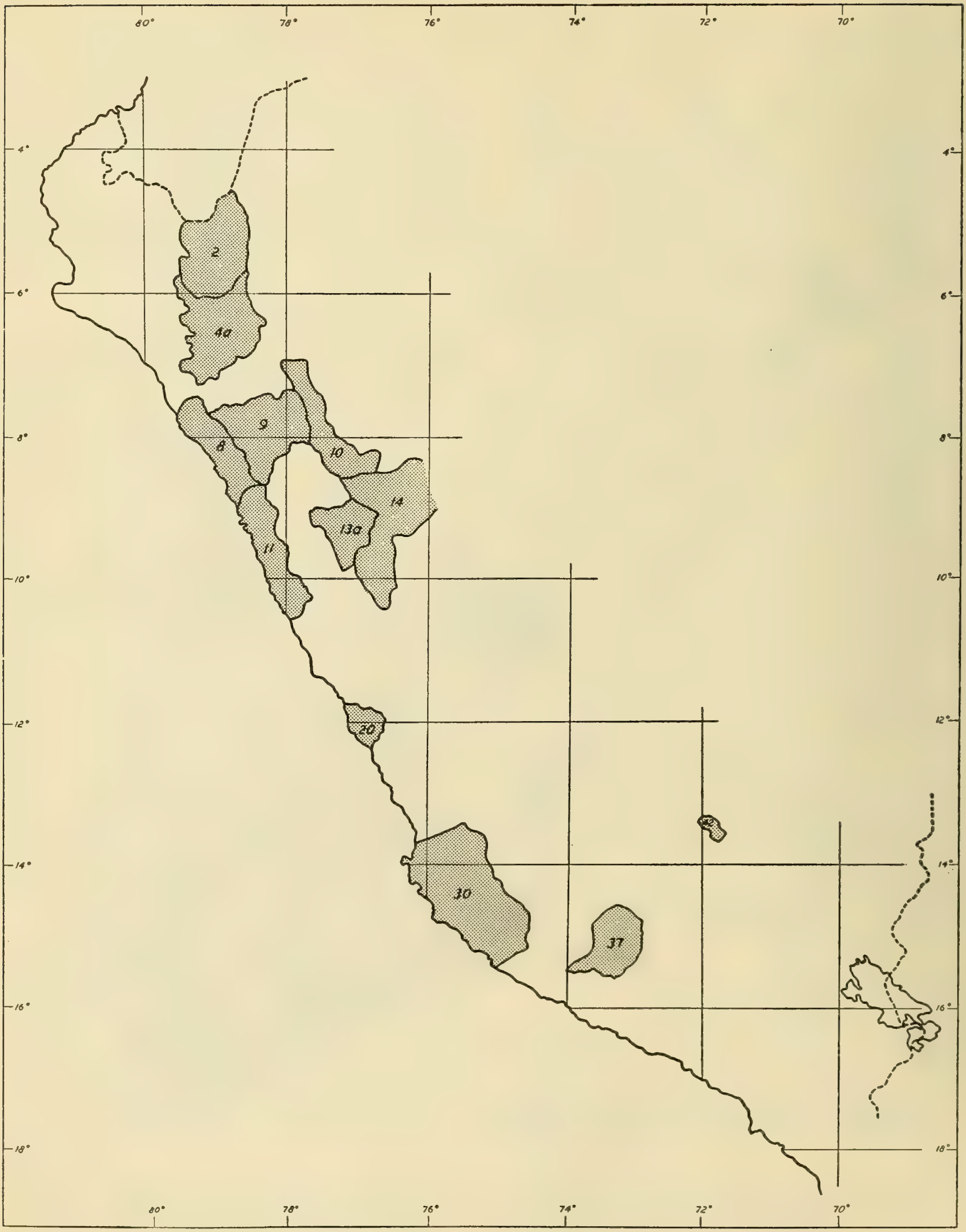
[45] MS. "Libro de Empadronamiento de Yndigenas de la Provincia de Huamalies," AHMH, R. 0262. 407 pp. The *informe* appears upon pp. 51–57, signed by Joaquín de Cortavarría, and dated August 20, 1842, at Aguamiros.

[46] MS. "Padron de Contribuyentes de . . . la Provincia de Conchucos Bajo," AHMH, R. 0112. 356 fos. The *informe* appears on fos. 353–354, signed by Bernardo de Albarinos and dated 1830.

[47] MS. "Matricula de Indígenas de la Provincia de Parinacochas, Depto de Ayacucho," AHMH, R. 0341. 148 fos. The *informe* is signed by Manuel Cardenas and dated at Ayacucho, December 17, 1847.



Map 3.—Provinces of Peru, 1826–54, based upon the geographical indications of the tax registers of the period.



Map 4.—Provinces with less than 50 percent Indian population in the period 1826–54.

when its figures are mapped by provincial caste majorities (maps 5, 7), reveals many new stresses in the social composition of the country. Most evident is the eastward colonization in the northern provinces, with the appearance of mestizo majorities in the Provinces of Huallaga and San Martín. Since 1876, the process of internal colonization has spread to the easternmost limits of the Republic. In 1876, however, the Marañón River Basin, in Pataz and Luya Provinces, was occupied by Indian provincial majorities, in such fashion as to split the new eastern colonization of mestizo character from the older enclave of non-Indian majorities in the Departments of Cajamarca and La Libertad.

Another area in which mestizo or non-Indian majorities appeared in 1876 for the first time in recorded detail, was in the northernmost coastal provinces. Tumbes, Paita, and Ayabaca appeared with substantially smaller Indian percentages than in previous generations. Farther south, Chancay Province also attained a majority in the mestizo population, in a gradual process whereby the entire Peruvian coast, with rare exceptions, came ultimately to be occupied by non-Indian groups. The Province of Castilla briefly appeared with a non-Indian majority, which it lost again by 1940. As this province was created in 1854, its "racial" composition had never before been recorded separately from the larger territorial unit of Condesuyos, from which it was carved, and for which demographic data are still lacking in the period 1826–54 (map 3).

In the central and southern highlands, two new enclaves of mestizo majority appeared in 1876. One is the Province of Huanta, concerning which we have nothing after the census of 1795 until 1876. In 1876 the census takers variously reported the total population as 15,322 and as 30,479 inhabitants. Geographically the province was a frontier upon the undeveloped montaña between the Apurimac and Urubamba Rivers. The uncertainty about its population may arise from the uncounted selvatic peoples in this region: if so, its mestizo majority may offer a southern parallel to the northern internal colonizations of Huallaga and San Martín Provinces.

The block of territory covered by Abancay, Aimaraes, and Antabamba Provinces likewise appeared briefly in 1876 with non-Indian majorities. Both before and since 1876, these provinces have been heavily Indian. Their brief respite from Indian dominance may be compared to that of Andahuaylas at the end of the eighteenth century. The provinces lie immediately east of Andahuaylas, and, with Andahuaylas, compose the Department of Apurimac as created in 1873 (Tarazona, 1946, p. 471).

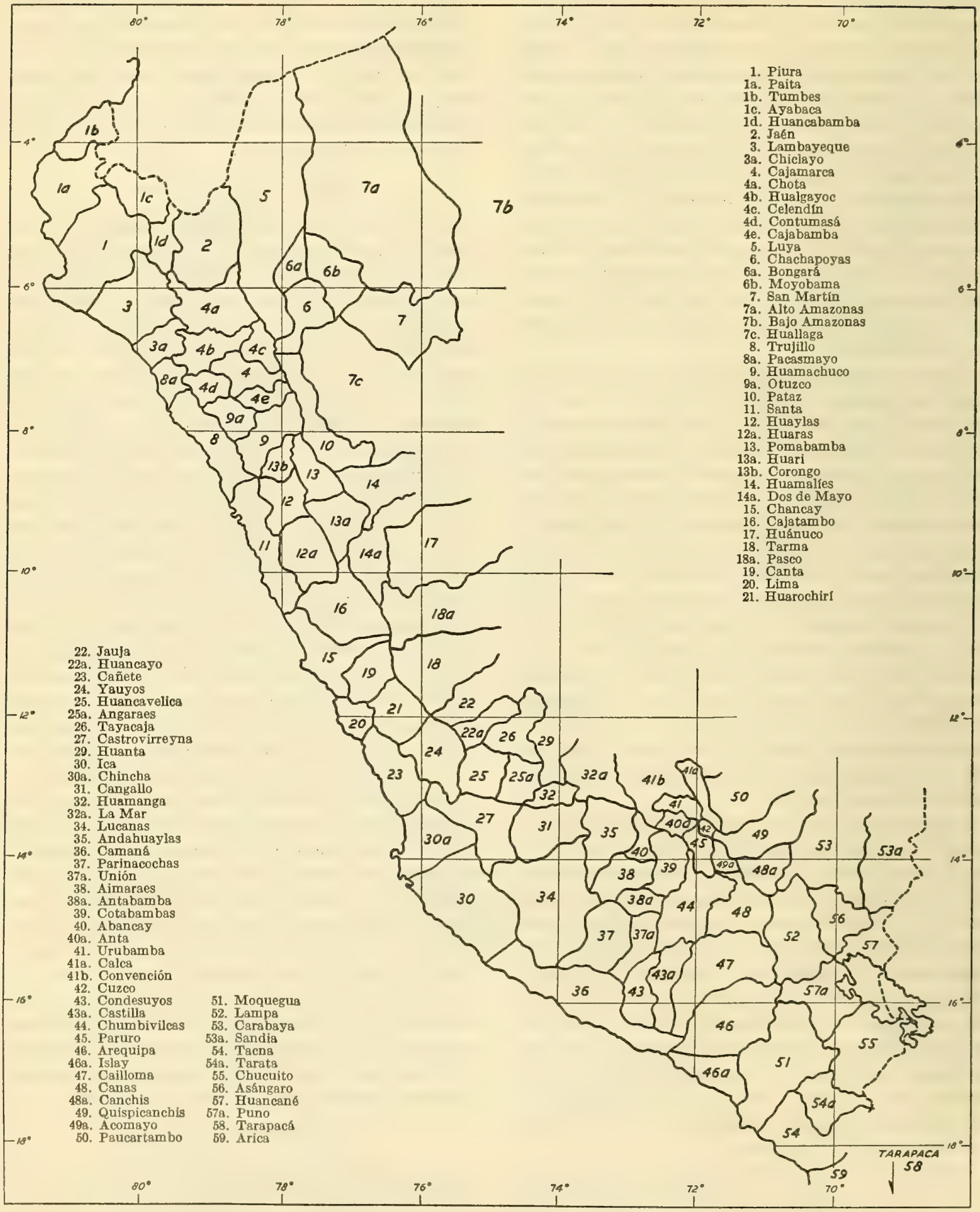
DISTRIBUTION IN 1940

John Rowe has refined the concept of the "Indian" as it was used by the census takers of 1940. He distinguishes "Indian" as defined by language from "Indian" as defined by subjective impression (Rowe, 1947, p. 214). Here, and to conform with the data for earlier periods, we shall use only the undifferentiated concept of the Indian. The map showing caste majorities by provinces in 1940 reveals three areas of Indian dominance: the central and southern highlands, from northern Ancash to the Bolivian border; the Province of Alto Amazonas; and the Province of Piura (maps 7, 8). Only Piura and Pisco, on the south coast, had Indian majorities among coastal areas in 1940. Alto Amazonas is a thinly populated region of selvatic tribes. The real geographical center of the Indian world of Peru is clearly and sharply defined in the great highland block. The unity of this block is all the more noteworthy when it is considered that the processes of provincial subdivision, attendant upon population increase, yield far more provinces, with smaller and smaller areas for statistical consideration.

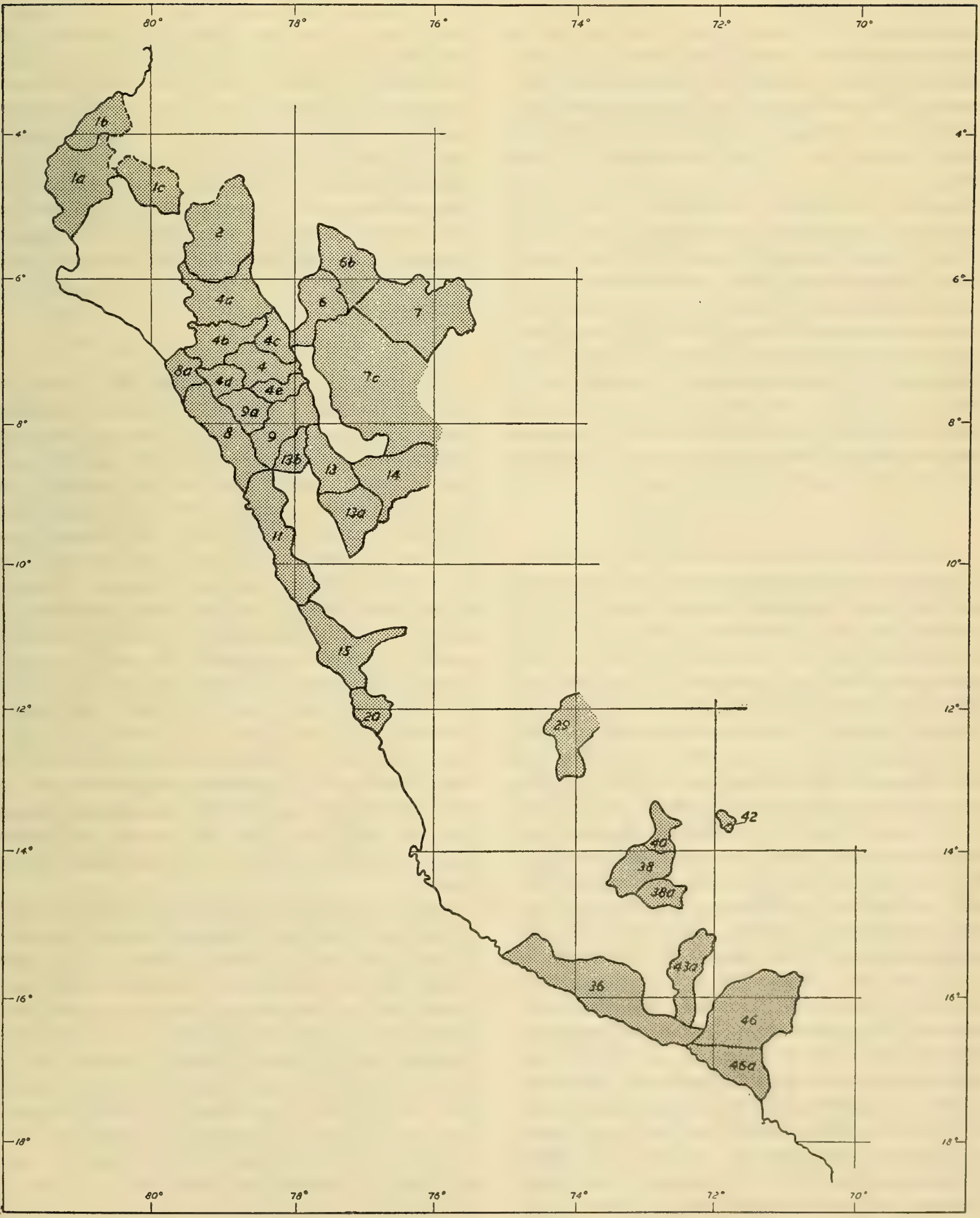
The mestizo territories are predominantly on the coast and in the northern highlands. On the coast the incursion of the non-Indian majorities into highland areas is noticeable, especially in the Provinces of Aija, Bolognesi, Cajatambo, and Yauli; in Moquegua and in Condesuyos. The tendency is for the mestizo majority to move steadily into the mountains from coastal or montaña bases. In the perspective of a century and a half, the sharp definition and geographical segregation of caste-identified territories (mestizo coast and montaña: Indian highland) has become a political reality only in the years before 1940.

CASTE PERCENTAGES

The foregoing discussion shows only schematic relations of majority dominance at several moments during the past century and a half. Taken together the majorities at various moments reveal



MAP 5.—Provinces of Peru in 1876, according to the data given in the general census of 1876.



Map 6.—Provinces with less than 50 percent Indian population in 1876.

changes in the social composition of the Peruvian population. But these changes can perhaps be apprehended more clearly if we examine the provincial rates of change between successive moments. This can be done by disregarding majority and minority groups, in favor of tabulation by caste percentages. In the accompanying maps (maps 9–16), Indian groups are recorded by the percentage of increase or decrease of the group since the head count immediately preceding. Thus we chart the growth or decline of the Indian group, relative to the total population of the respective province, by changes in the percentage of the group between 1796, 1826–54, 1876, and 1940. In the first two tabulations, for 1795–1826/54, and 1826/54–1876, the information is incomplete because we lack the tax registers for several provinces during 1826–54. Such undocumented provinces are cross-hatched in the map showing the political divisions of the early Republic (map 3).

PERCENTAGES IN 1795, 1826–54

Maps 9 and 10 show percentage changes as they would have appeared to a student of the question in 1854, based upon the viceregal census of 1795 and upon the tax registers from 1826 to 1854. It is immediately evident that the Indian caste throughout Peru had increased in numbers, and that this increase had occurred throughout the Republic (map 9). The extreme north shows relative Indian increase as a whole, in Piura and Chachapoyas. On the coast as a whole, the Indian group was increasing relative to the non-Indian group, especially in Trujillo, Chancay, and Ica, where strong rising percentages were recorded. On the coast the Indian groups lost ground relative to others only in Santa and Lima (map 10), where the shifts of strength were small. In the highlands generally, the strongest relative gains of the Indian caste were registered for the easternmost provinces: Pataz, Huánuco, and Urubamba (map 9). Elsewhere strong Indian gains appeared in areas that today are more densely Indian than they were at the end of the Colonial era: Conchucos, Andahuaylas, Chumbivilcas, and Canas (map 9).

Map 10, which records relative Indian losses, shows far weaker percentage changes. The greatest loss recorded is for Cotabambas (now Grau) Province, in the south highlands, and Jaén in the north. Comparison of maps 9 and 11 shows that increasing Indian percentages are linked together in continuing blocks, as from Luya to Chancay Provinces. These blocks enclose or surround far smaller areal units in which the mestizo groups were gaining ground. The maps clearly indicate the extent to which Colonial population trends of the late eighteenth century had been arrested and even reversed by 1854. This appears also in the total figures for the Republic. After we exclude the provinces not reported either in 1795 (all the Department of Puno), or in 1826–54 (as marked on map 3), the Indian percentage relative to total population was 57.96 percent in 1795; by 1854 this had risen to 59.35 percent.

PERCENTAGES IN 1826–54

The preceding discussion has the defect of treating the period 1826–54 as a unit. Actually the tax registers of this period were prepared at 5-year intervals. Hence if all tax registers had been prepared, and if they had all survived, we would have six different census reports for the Republic, spaced 5 years apart. As it is, numbers of these reports either were never prepared, or if prepared, they were lost or destroyed. Instead of six census reports, we have large fragments of each that can be assembled to produce the rough record of two census reports. The earlier is based upon the registers before 1840, and the later upon registers after that date to 1854. For many provinces a report upon both Indian and non-Indian groups is available in both periods, before and after 1840. It therefore seemed desirable to plot relative changes of the two groups during the time 1826–54. The effort reveals tendencies of the population that could not otherwise be known.

Indian percentages decreased relative to total populations only in the central coastal Province of Santa, and in the southern provinces. In other words, the mestizo gains by percentage were registered mainly in southern Peru, in the traditional stronghold of the Indian world. Ica, Castrovirreyna, and the newly created Province of La Unión, registered the strongest mestizo advances. The block from Ica, through Castrovirreyna, Yauyos, and Jauja Provinces, extends from the Pacific to the Apurimac Basin. These mestizo advances are particularly significant in view of the fact that after 1840, the tax collectors were increasingly unable to register the mestizo or *casta* inhabitants in each province. These citizens evaded the tax with every means of ingenuity. Hence any tax register that shows an increase in mestizo percentages after 1840 probably reports the fact only in partial detail.

Indian gains (map 11) were registered during the same period in far fewer southern provinces, and notably in certain central and northern provinces. In the south, Indian percentage gains were remarkable only in Urubamba, Abancay, and Parinacochas Provinces. Taken together with other south highland provinces, these territories of Indian increase, relative to the total population in each province, may be regarded as an Indian bastion, centrally situated in the Department of Cuzco, at the edges of which the mestizo wave was encroaching after 1840.

On the central coast Chancay Province continued after 1840 the sharp Indian increase, already noted between 1795 and about 1840. In the northern highlands, only Pataz Province registered a decisive Indian increase, which was to continue with equal vigor until after 1876. Cajamarca showed appreciable Indian gains, although in all these instances, the reluctance of the mestizos to appear in the tax registers may be taken to invalidate, in part at least, these Indian gains. Surely the remarkable modern Indianization of the Callejón de Huaylas has antecedents in the steady if small Indian gains in Huaylas, continuous there from 1795 to the present.

PERCENTAGES IN 1826/54–1876

Indian gains by percentage (map 13) show a grouping that prefigures the present state of affairs. In the extreme north, Piura and Jaén became appreciably more Indian. On the other hand the block of northern provinces, composed of Conchucos, Trujillo, Cajamarca, Chota, and Chachapoyas, became more markedly mestizo (map 14).

In central and southern Peru, mestizo gains continued in massive progress (map 14), through a solid block extending southeastward from Chancay to Huancané Province on Lake Titicaca at the Bolivian frontier. The conversion to non-Indian majorities was especially rapid in Chancay and Ica Provinces on the coast, and in the southern provinces of the Departments of Apurimac and Cuzco.

Indian gains (map 13) in central and southern Peru were fewer than at any previous time within our knowledge. In Yauyos and Castrovirreyna, earlier mestizo gains were checked by a momentary increase in Indian percentages. Parinacochas and Canas alone in the Department of Cuzco showed Indian gains. In Puno, only the Province of Chucuito gained Indians more rapidly than mestizos.

In general, the period is marked by overwhelming mestizo gains in the south (map 14), and by extremely rapid Indian gains in Libertad and in the provinces centering upon the Callejón de Huaylas (map 13). As the south became more mestizo, the extreme north and the Departments of Ancash and Huánuco became more Indian. The process has nothing to do with biological increases. It is entirely and purely a social process, with caste demarcations undulating variably in time and space, in response to local and governmental attitudes of which the detailed analysis is still not possible.

PERCENTAGES IN 1876–1940

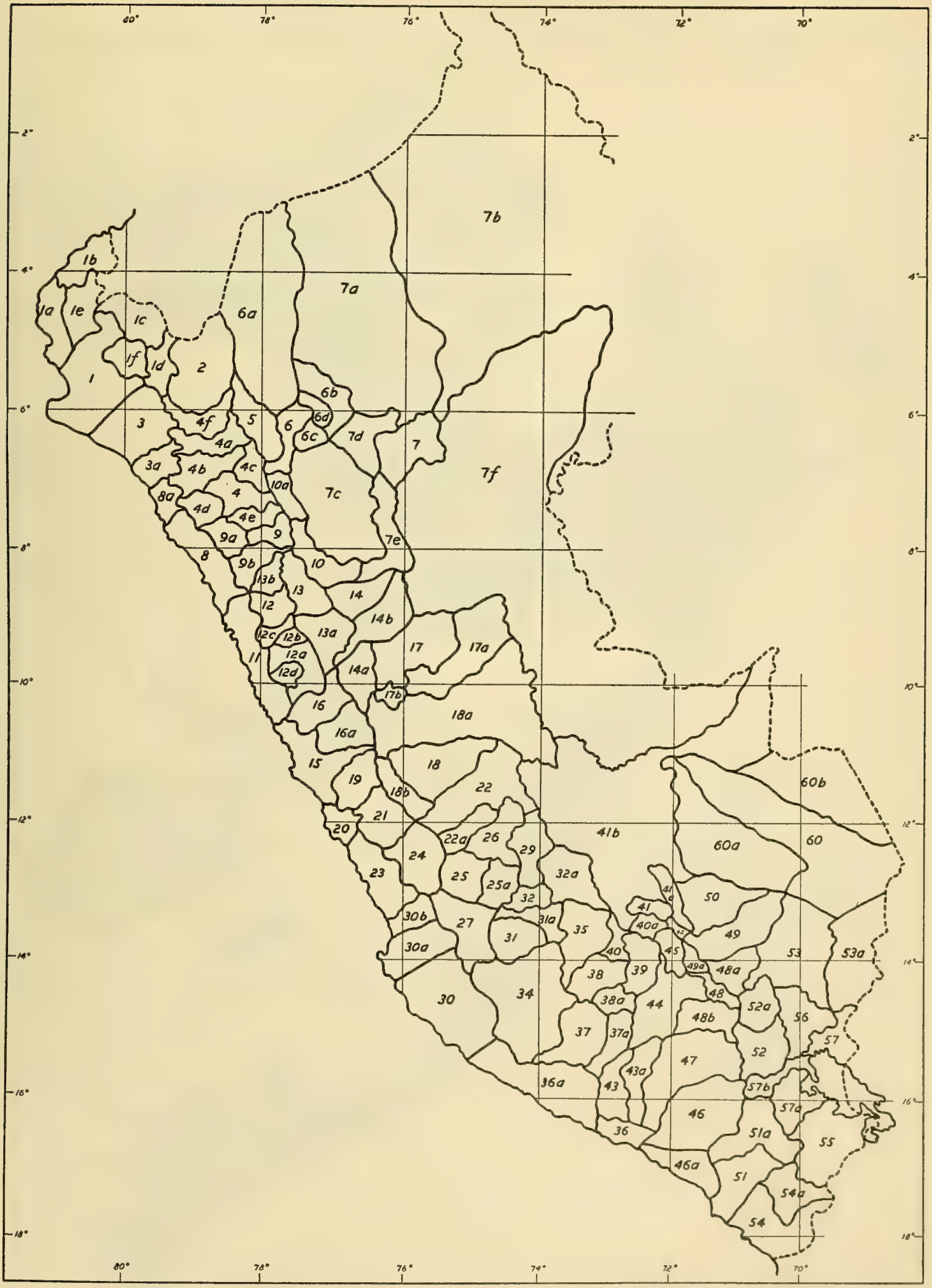
In the extreme north, in the Department of Piura, the great Indian increases during the preceding period, rapidly abated in all provinces excepting Ayabaca (map 15). It will be recalled that Ayabaca, Piura, and Huancabamba Provinces still showed Indian majorities in 1940 (map 8). But between 1876 and 1940, Piura and Huancabamba both gained mestizo or non-Indian population (map 16). Piura in fact gained it at the rate of more than 31 percent in 64 years.

From the Callejón de Huaylas eastward to Huamalíes, extremely sharp Indian increases in well-defined territory appear (map 15). Even Pallasca and Pomabamba Provinces, where the mestizo percentages had been gaining very rapidly before 1876, reversed their tendency with Indian increases of great magnitude.

Farther south, Indian increases on a large scale are evident from Jauja to Abancay, and due south from Abancay to Camaná and Caravelí (map 15). In this block only the urban Province of Huamanga, with the departmental capital of Ayacucho, was exempted from the general increase of Indian percentages. The phenomenon reverses all trends for the same area during the preceding period. The abrupt reversal of trend also charac-

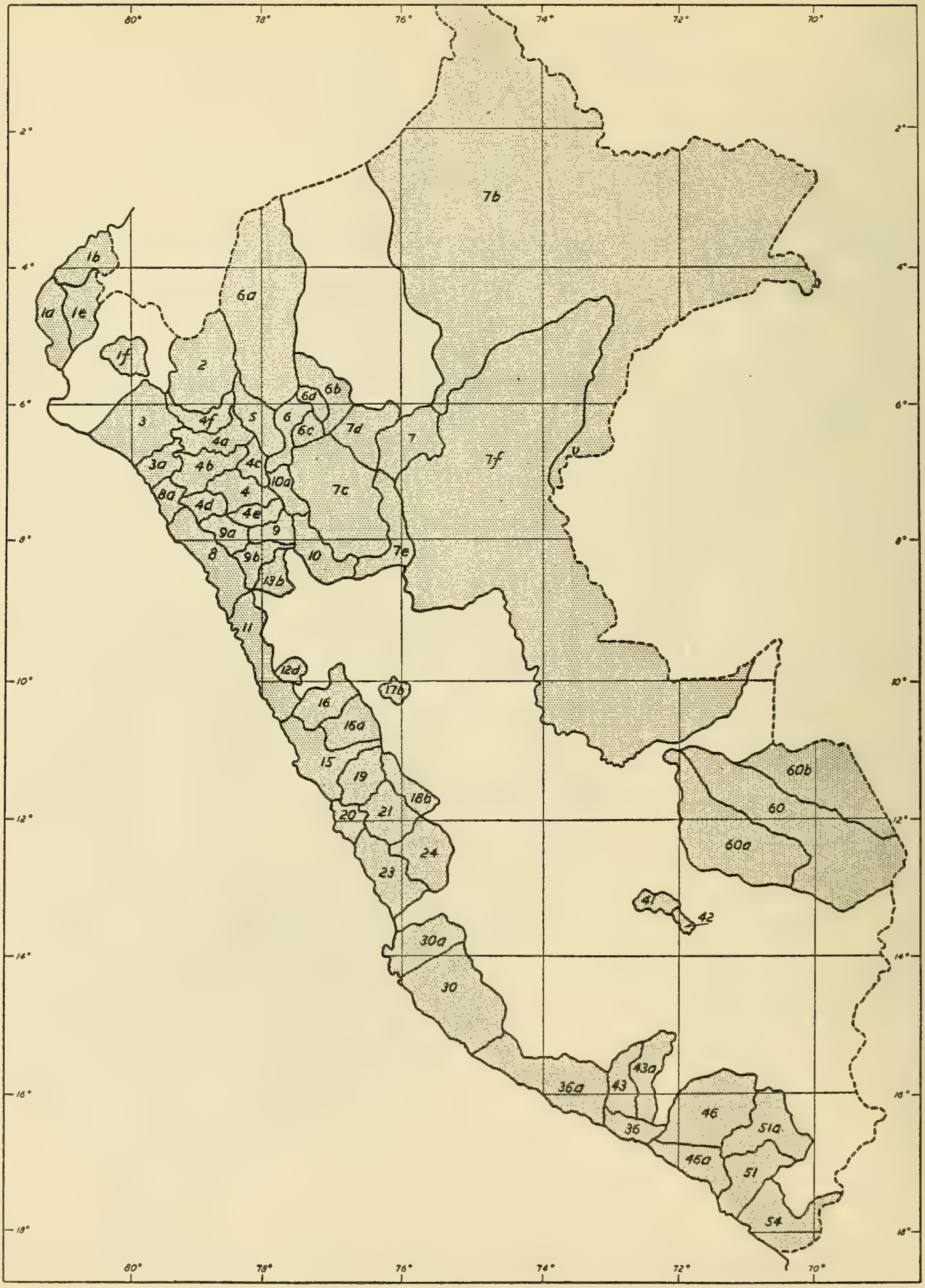
Names of provinces outlined in map 7

1. Piura
1a. Paita
1b. Tumbes
1c. Ayabaca
1d. Huancabamba
1e. Sullana
1f. Morropón
2. Jaén
3. Lambayeque
3a. Chiclayo
4. Cajamarca
4a. Chota
4b. Hualgayoc
4c. Celendín
4d. Contumasá
4e. Cajabamba
4f. Cutervo
5. Luya
6. Chachapoyas
6a. Bongará
6b. Moyobamba
6c. Rodríquez de Mendoza
6d. Rioja
7. San Martín
7a. Alto Amazonas
7b. Bajo Amazonas
7c. Huallaga
7d. Lamas
7e. Mariscal Cáceres
8. Trujillo
8a. Pacasmayo
9. Huamachuco
9a. Otusco
9b. Santiago de Chuco
10. Pataz
10a. Bolívar
11. Santa
12. Huaylas
12a. Huarás
12b. Carhuas
12c. Yungay
12d. Aija
13. Pomabamba
13a. Huari
13b. Pallasca
14. Marañón
14a. Dos de Mayo
14b. Huamalíes
15. Chancay
16. Bolognesi
16a. Cajatambo
17. Huánuco
17a. Pachitea
17b. Ambo
18. Tarma
18a. Pasco
18b. Yauli
19. Canta
20. Lima
21. Huarochirí
22. Jauja
22a. Huancayo
23. Cañete
24. Yauyos
25. Huancavelica
25a. Angaraes
26. Tayacaja
27. Castrovirreyna
29. Huanta
30. Ica
30a. Pisco
30b. Chincha
31. Victor Fajardo
31a. Cangallo
32. Huamanga
32a. La Mar
34. Lucanas
35. Andahuaylas
36. Camaná
36a. Caravelí
37. Parinacochas
37a. Unión
38. Aimaraes
38a. Antabamba
39. Grau
40. Abancay
40a. Anta
41. Urubamba
41a. Calca
41b. La Convención
42. Cuzco
43. Condesuyos
43a. Castilla
44. Chumbivilcas
45. Paruro
46. Arequipa
46a. Islay
47. Cailloma
48. Canas
48a. Canchis
48b. Espinar
49. Quispicanchis
49a. Acomayo
50. Paucartambo
51. Mariscal Nieto
51a. General Sánchez Cerro
52. Lampa
52a. Melgar
53. Carabaya
53a. Sandia
54. Tacna
54a. Tarata
55. Chucuito
56. Asángaro
57. Huancané
57a. Puno
57b. San Román
60. Tambopata
60a. Manu
60b. Tahuamanu

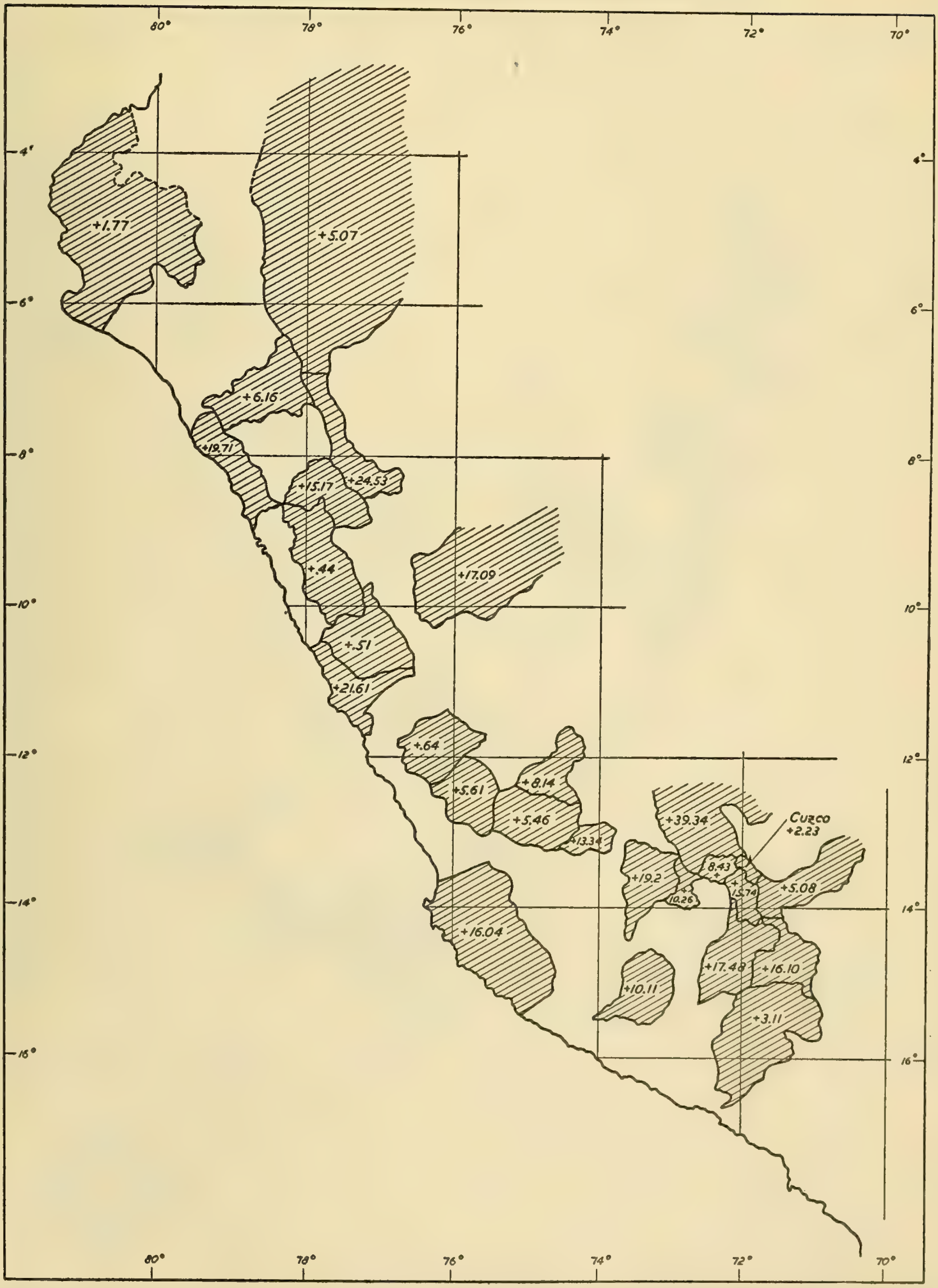


MAP 7.—Provinces of Peru, according to the divisions observed at the time of the census of 1940.

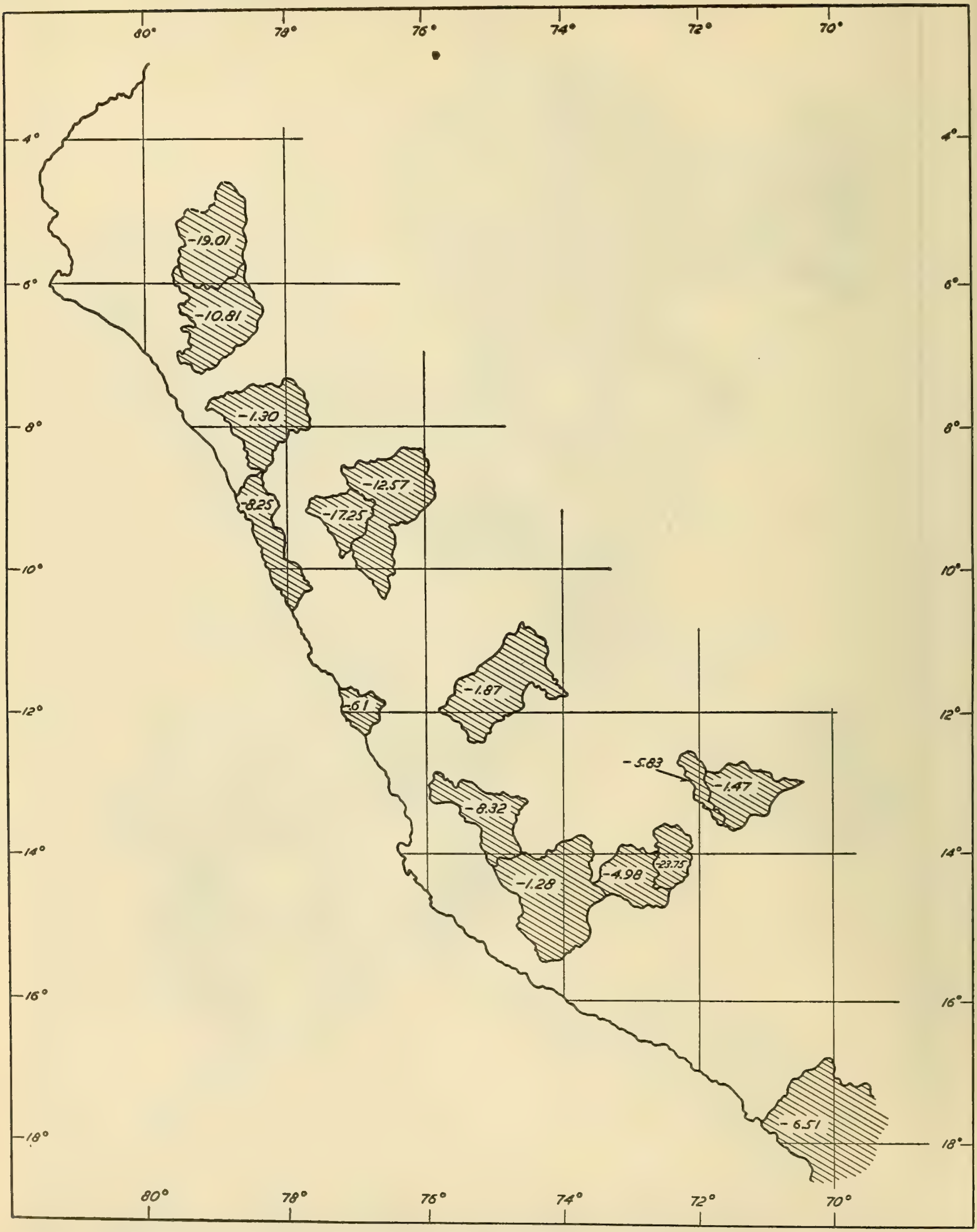
(For names of provinces, see opposite page.)



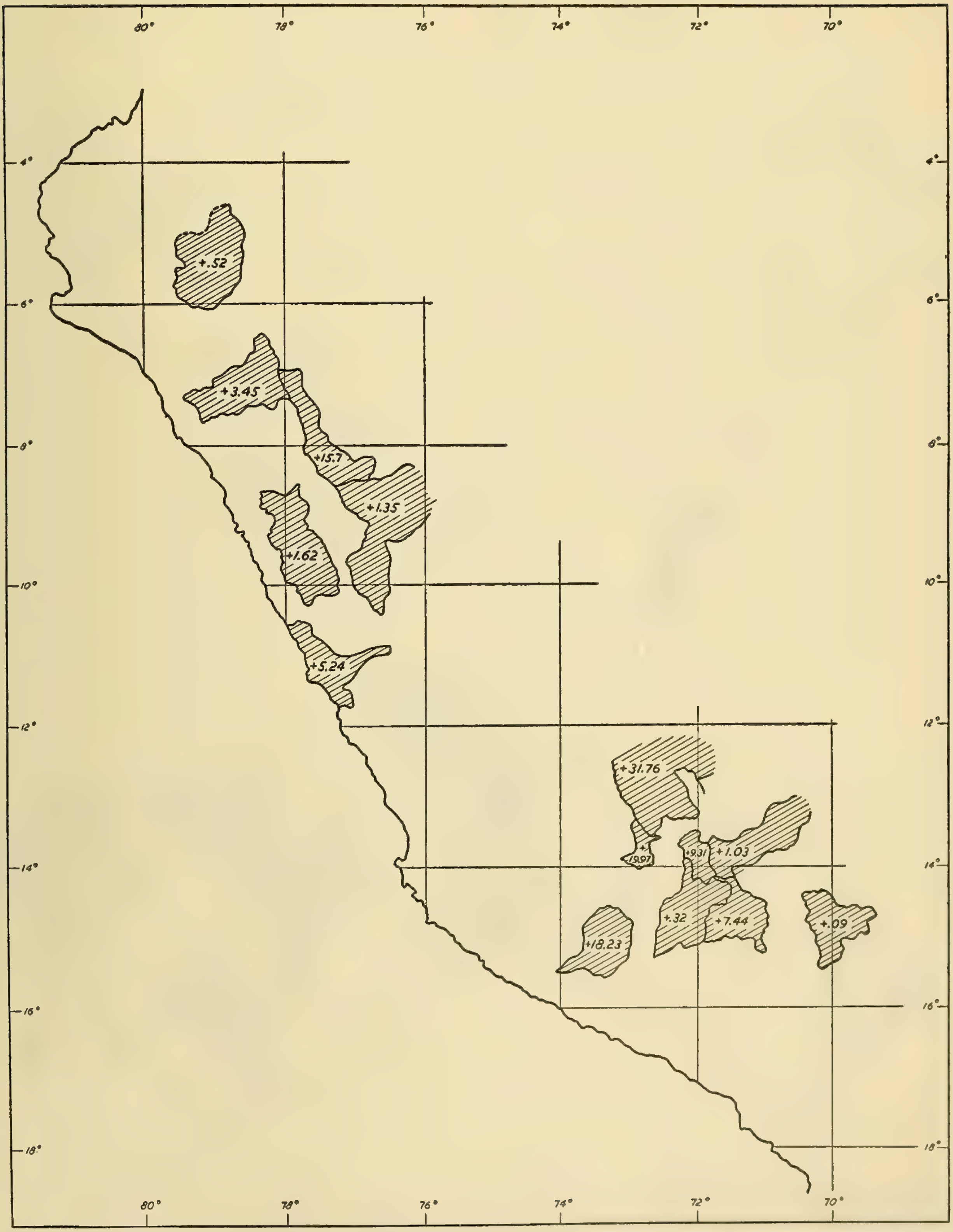
MAP 8.—Provinces with less than 50 percent Indian population according to the census of 1940.



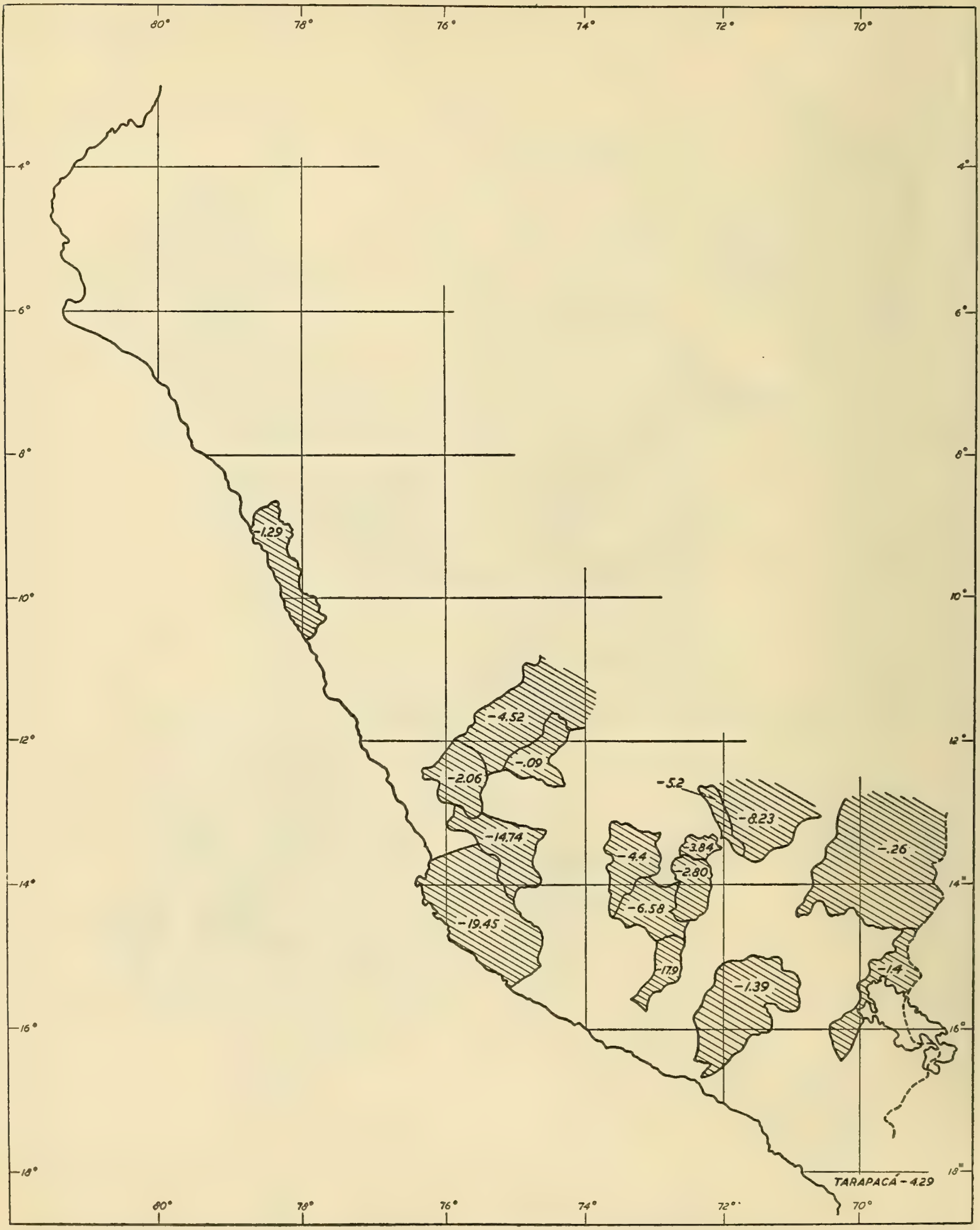
Map 9.—Provinces in which Indian percentages increased during the period 1795–1826/54. The increase per hundred population is noted in each province. The provinces may be identified by the key to map 1, showing the boundaries of 1795.



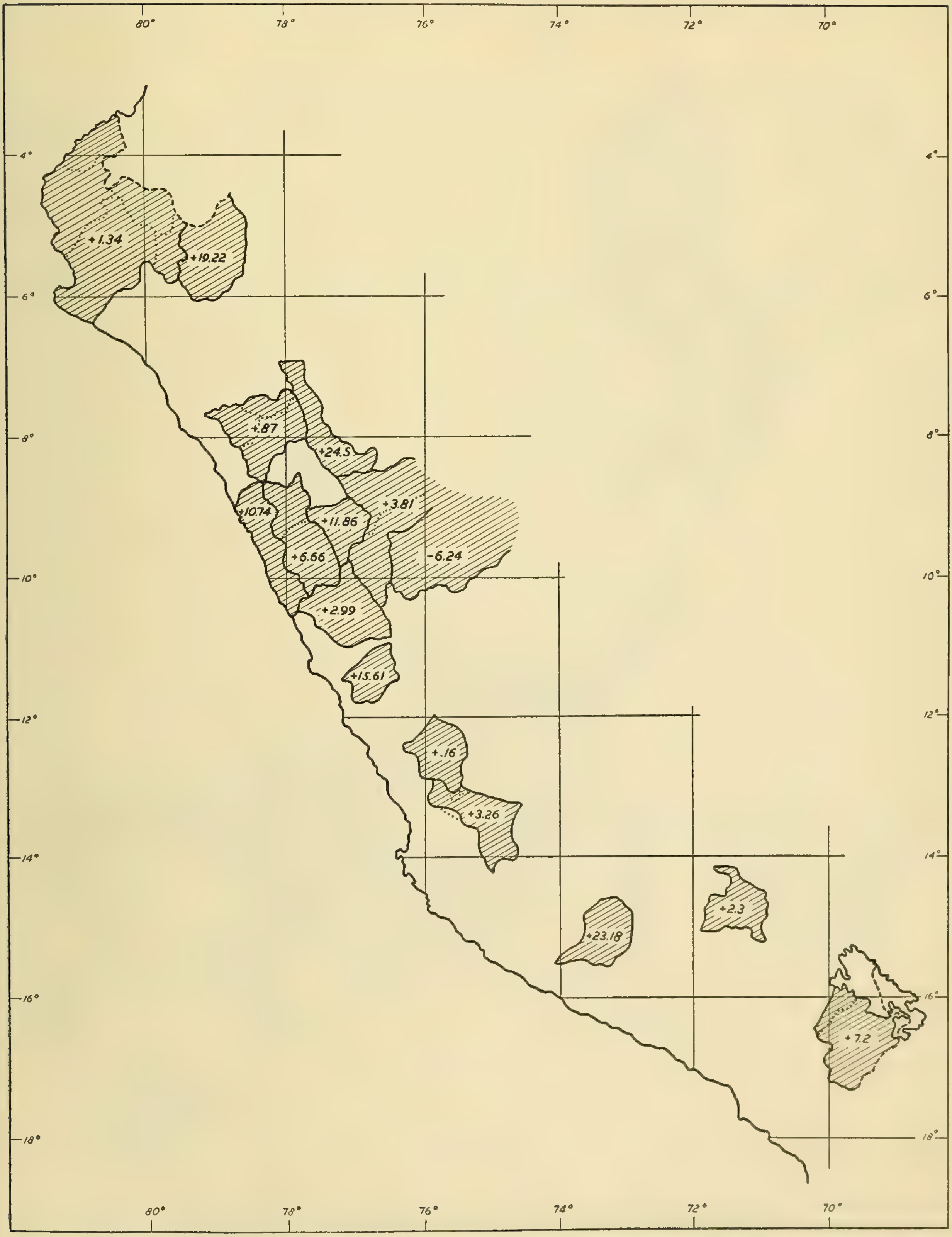
Map 10.—Provinces in which Indian percentages decreased during the period 1796–1826/54. The decrease per hundred population is noted in each province. See key to provinces in map 1.



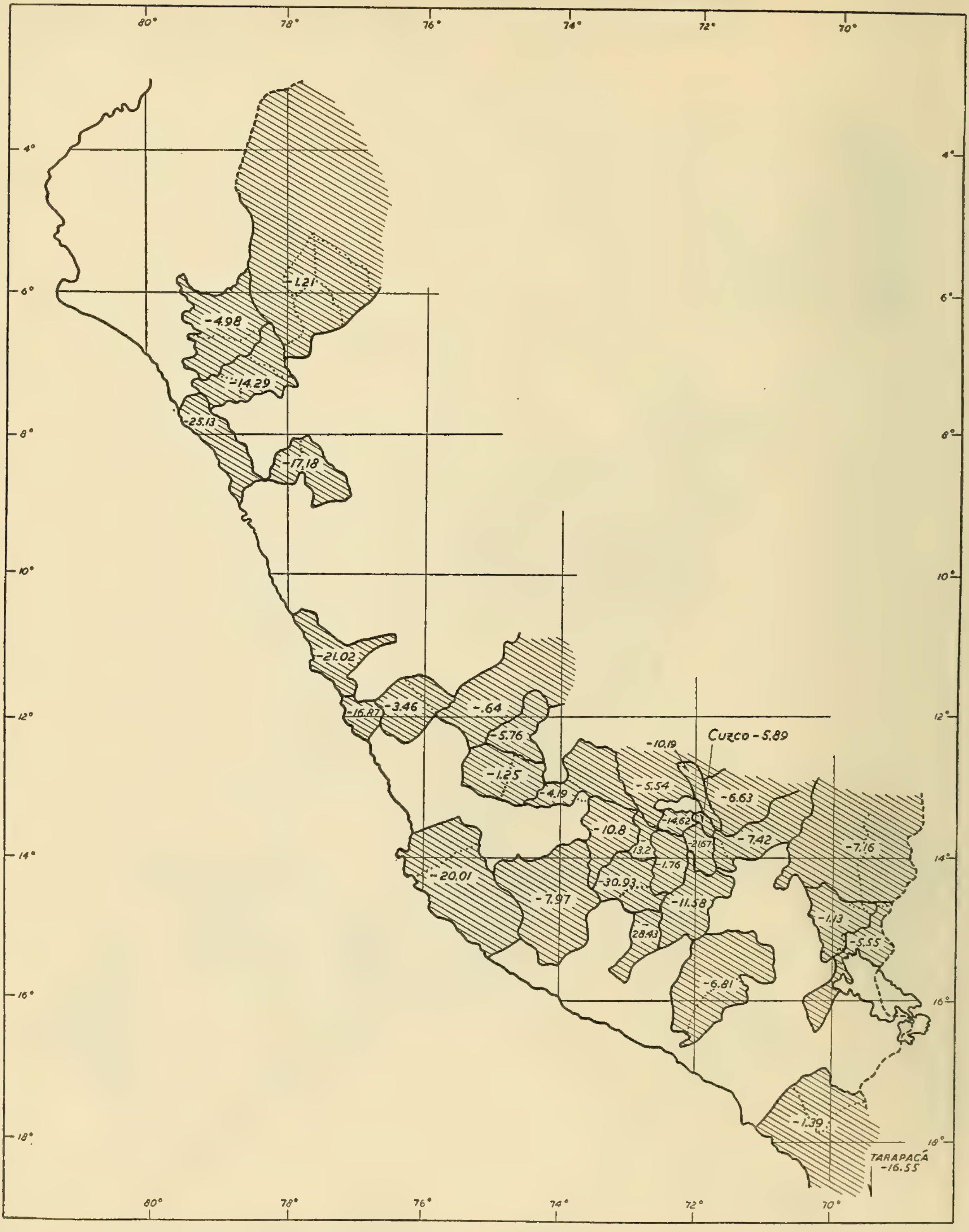
Map 11.—Provinces in which Indian percentages increased during the period 1826–54. The increase per hundred population is noted in each province. See key to provinces in map 3.



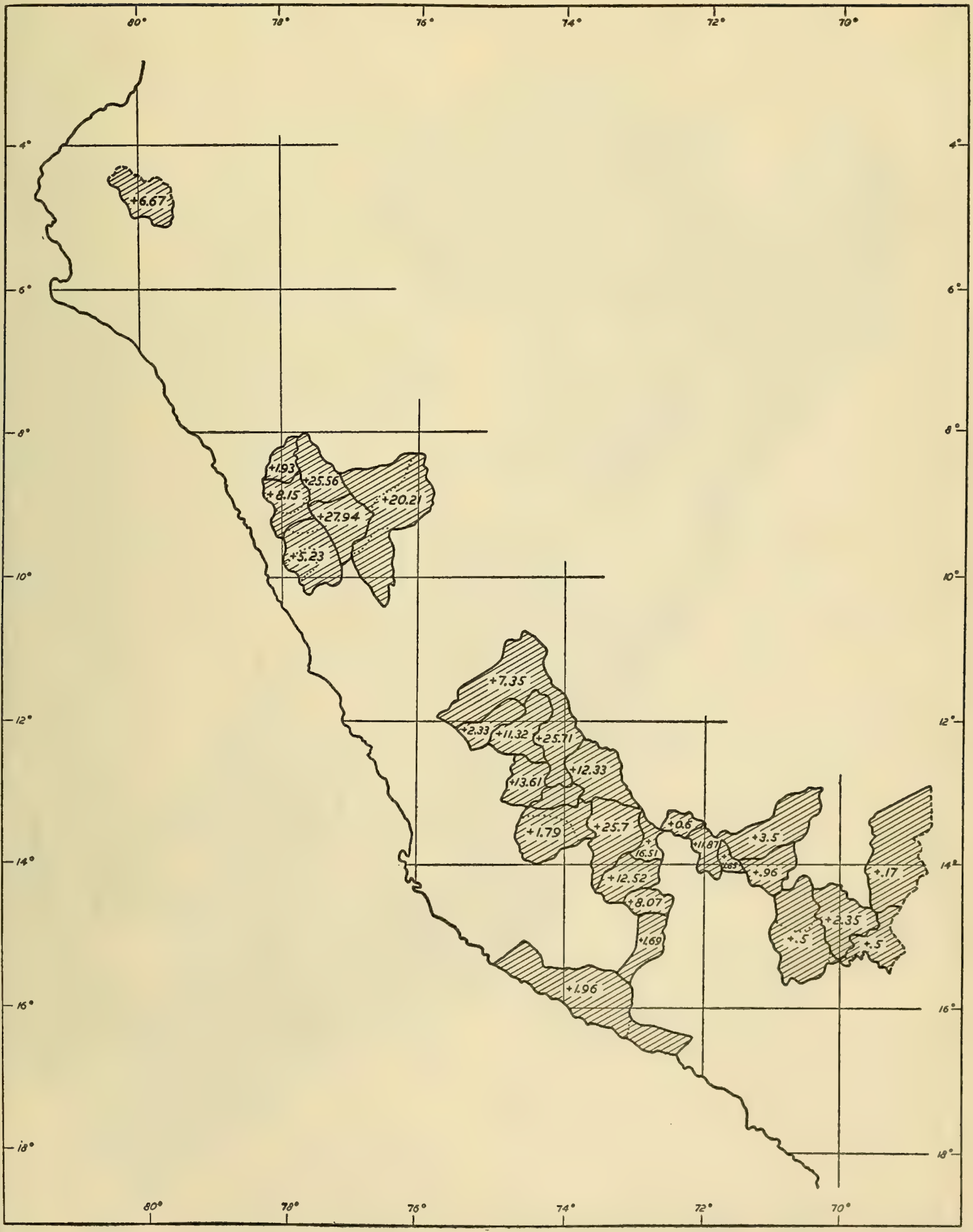
MAP 12.—Provinces in which the Indian percentages decreased during the period 1826-54. The decrease per hundred population is noted in each province. See key to provinces in map 3.



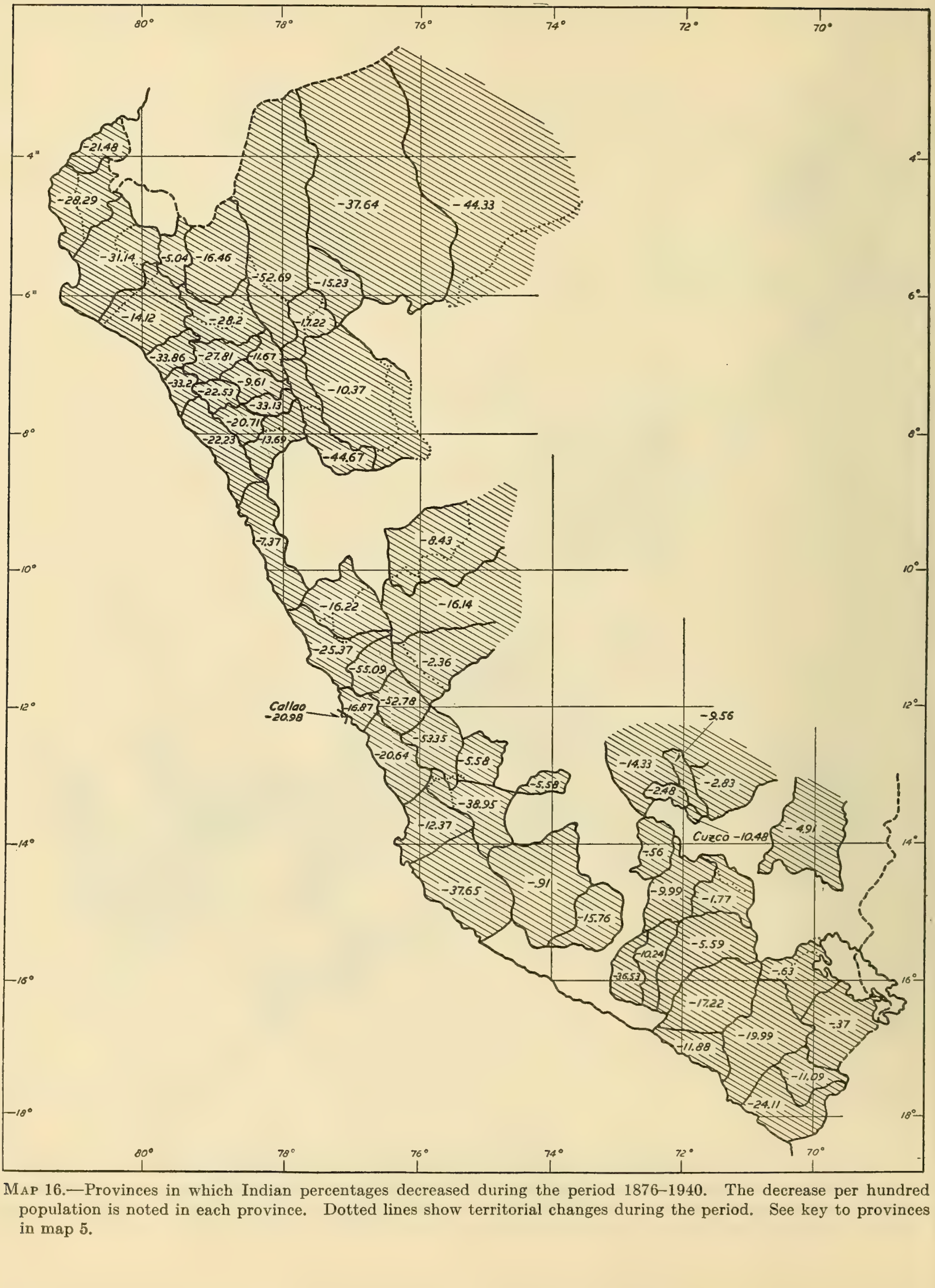
Map 13.—Provinces in which the Indian percentages increased during the period 1826/54–1876. The increase per hundred population is noted in each province. Dotted lines show territorial changes during the period. See key to provinces in map 3.



Map 14.—Provinces in which the Indian percentages decreased during the period 1826/54–1876. The decrease per hundred population is noted in each province. Dotted lines show territorial changes during the period. See key to provinces in map 3.



MAP 15.—Provinces in which Indian percentages increased during the period 1876–1940. The increase per hundred population is noted in each province. Dotted lines show new territorial divisions during the period. See key to provinces in map 5.



MAP 16.—Provinces in which Indian percentages decreased during the period 1876–1940. The decrease per hundred population is noted in each province. Dotted lines show territorial changes during the period. See key to provinces in map 5.

terizes the provinces southeastward from Anta to the Bolivian frontier. In contrast to the preceding period, the southern provinces gained Indian percentages more rapidly than the northern districts, and throughout Peru, the areas of Indian gain by percentage are more numerous by 1940 than in 1876, although their grouping is more definitely clustered or "islanded" than in the earlier period. It is as if the Indian groups in 1876–1940 could register gains only in isolated highland areas, and in the most thinly settled part of the coast. This "islanded" growth pattern for the Indian caste is of importance when compared with the map displaying majority distributions in 1940 (map 8). The map by percentages of Indian increase shows that the Indian majority was not holding the advantage during the decades prior to 1940 in many parts of highland Peru. The area of Indian majority looks monolithic, but when its growth is analyzed as above, only five islands of continuing Indian growth emerge. These are in Ayabaca, in the Departments of Ancash and Huánuco; in parts of the Departments of Junín, Huancavelica, Apurimac, and Arequipa; and finally, two "islands" in the Departments of Cuzco and Puno. Whether the shores of these "islands" (map 15) will be even further reduced by mestizo expansion and growth, cannot be predicted.

Turning to the map of non-Indian gains (map 16), we note that these are the rule nearly everywhere in Peru. Except for Camaná and Caravelí, the entire Peruvian coast now shows mestizo increases. As the census of 1876 gives no figures for the easternmost provinces of Peru, there the obvious mestizo gains cannot be given by percentages. Otherwise, non-Indian gains are continuous from north to south, excepting for the Indian "corridor" from eastern Jauja and Huanta Provinces to the Pacific in Camaná and Caravelí (map 15). The only other such "corridor" is in the Departments of Ancash and Huánuco, but it is blocked from the coast by the non-Indian increases in Santa Province.

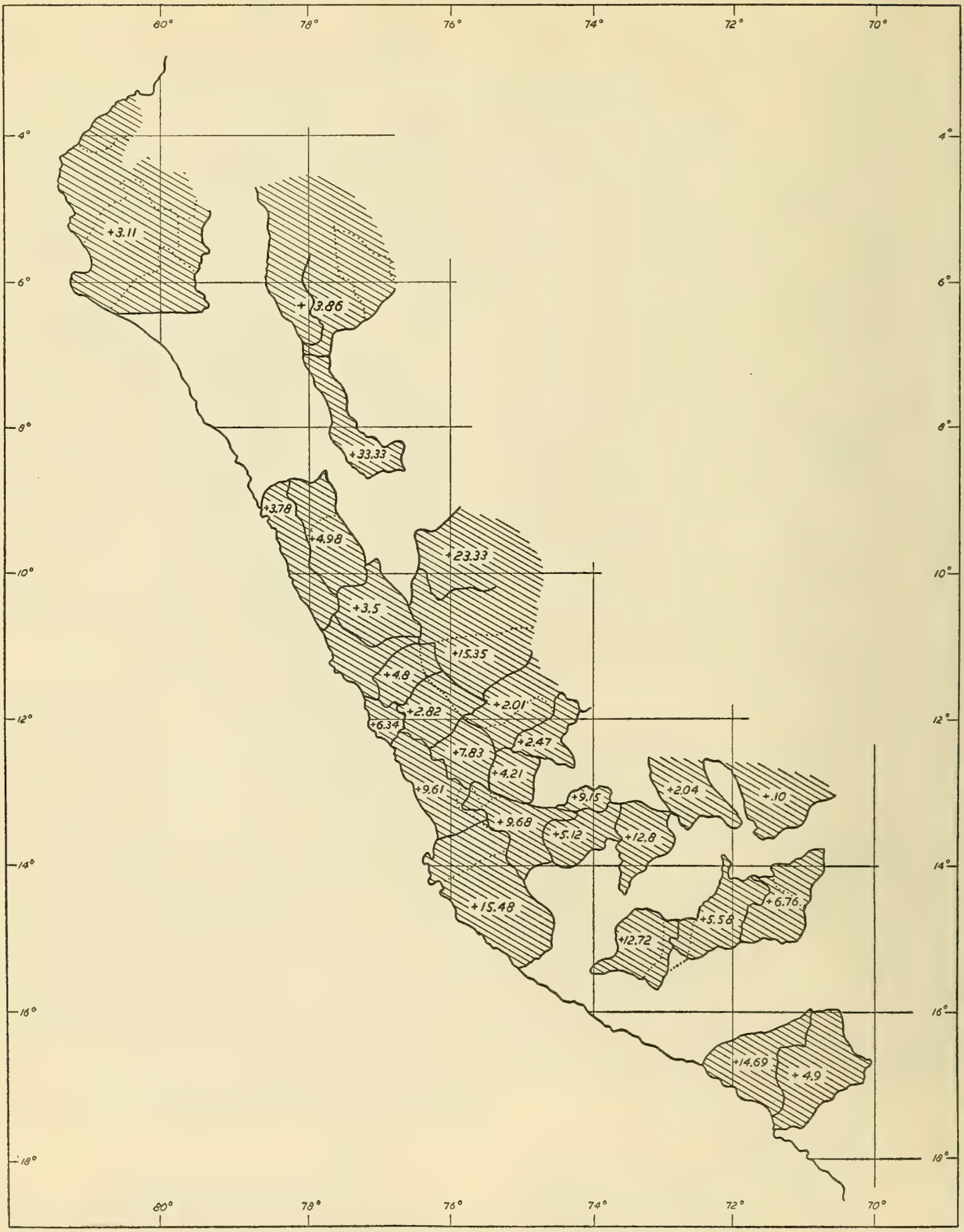
PERCENTAGES IN 1795–1876

The preceding sections yield some idea of the rate of demographic change in respect to caste at intervals of one or two generations. They reveal that caste trends were accelerated or reversed here and there at various times without evident pattern or uniformity. By isolating the data over longer intervals, we can hope to chart the gross patterns of change. From 1795 to 1876 the gains and losses by caste, relative to total provincial populations, show an interesting distribution. By area (map 17), the territory in which the Indian caste was gaining ground more rapidly than the non-Indian, is a territory greater than that in which the mestizos were gaining. In other words, in most of Peru, the Indian caste gained members more rapidly than the mestizo caste. In the north and south, however, Indian growth was spotty. Piura and Chachapoyas were separated by a great mestizo block. In the southern highland areas, several distinct islands of Indian growth appear in the Departments of Cuzco, Apurimac, and Arequipa. Unfortunately we cannot view the distribution in the Department of Puno, because the census of 1795 does not include these provinces that were transferred to the Audiencia of Charcas. But in central Peru accelerated Indian growth was the rule, even in the coastal provinces of the Department of Lima, from Santa to Ica. Hence the geographical center of Indian increase, 1795–1876, may be defined as the central highlands, from Huaylas to Huancavelica and extending to the coastal provinces in that zone.

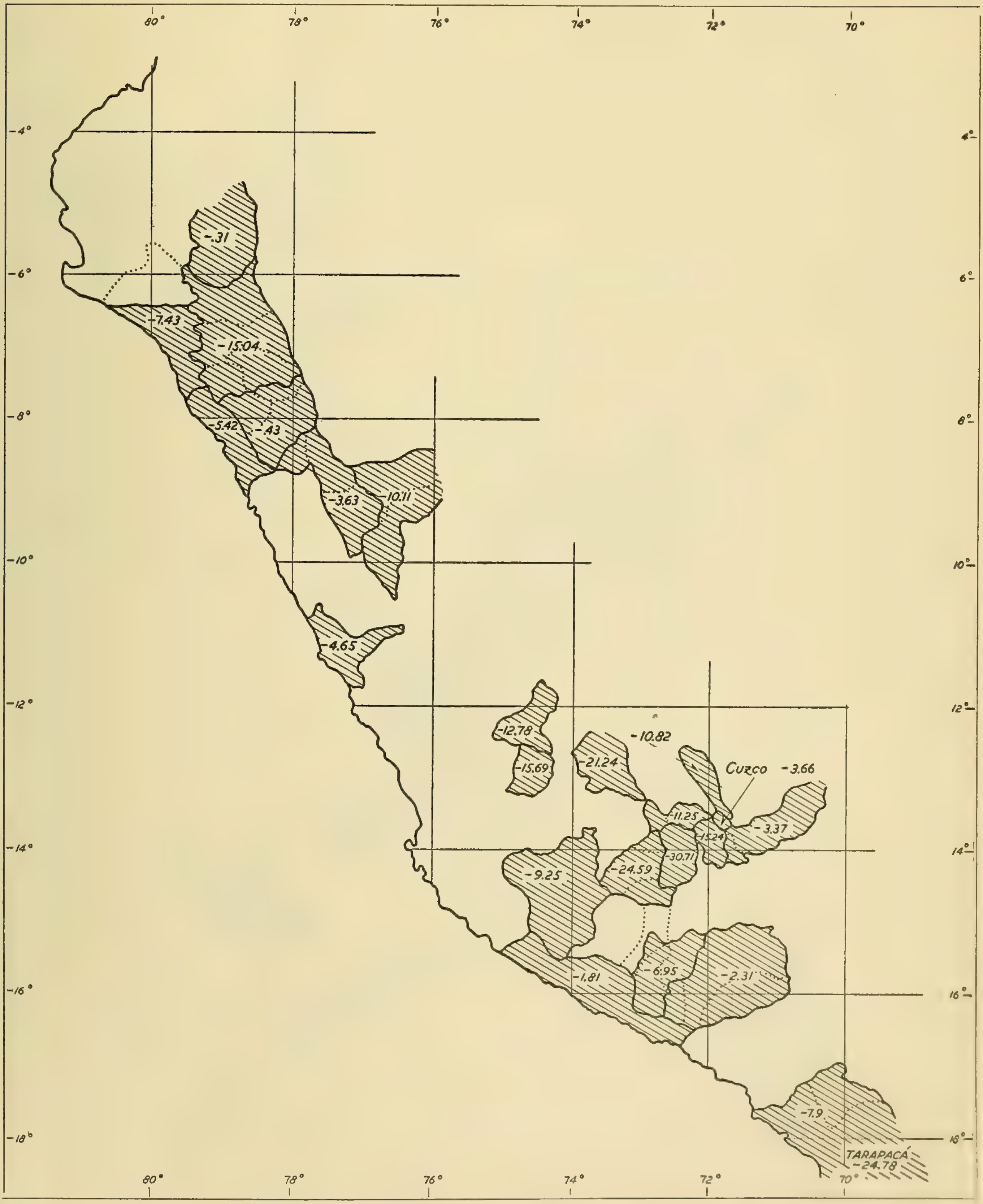
Mestizo increases (in terms of Indian decreases by percentage) are seen in map 18. The situation of 1795 still held good: the mestizo world consisted of enclaves thrusting into a highland world predominantly Indian by rate of growth. These enclaves in the north, on the central coast, and in the southern highlands, reflect growth rates that deserve comment. In Aimaraes, about one-quarter of the population had shifted from Indian to mestizo status between 1795 and 1876. No other area shows such a high rate of transfer to mestizo status. But the areas of Indian growth (map 17) are not only more extensive and more numerous: their rate of growth is also higher, as in Pataz Province, where the Indian percentage rose 33 percent higher than in 1795. In brief, Indian Peru was more extensive in 1876 than in 1795, and it was growing faster than mestizo Peru in 1876.

PERCENTAGES IN 1795–1940

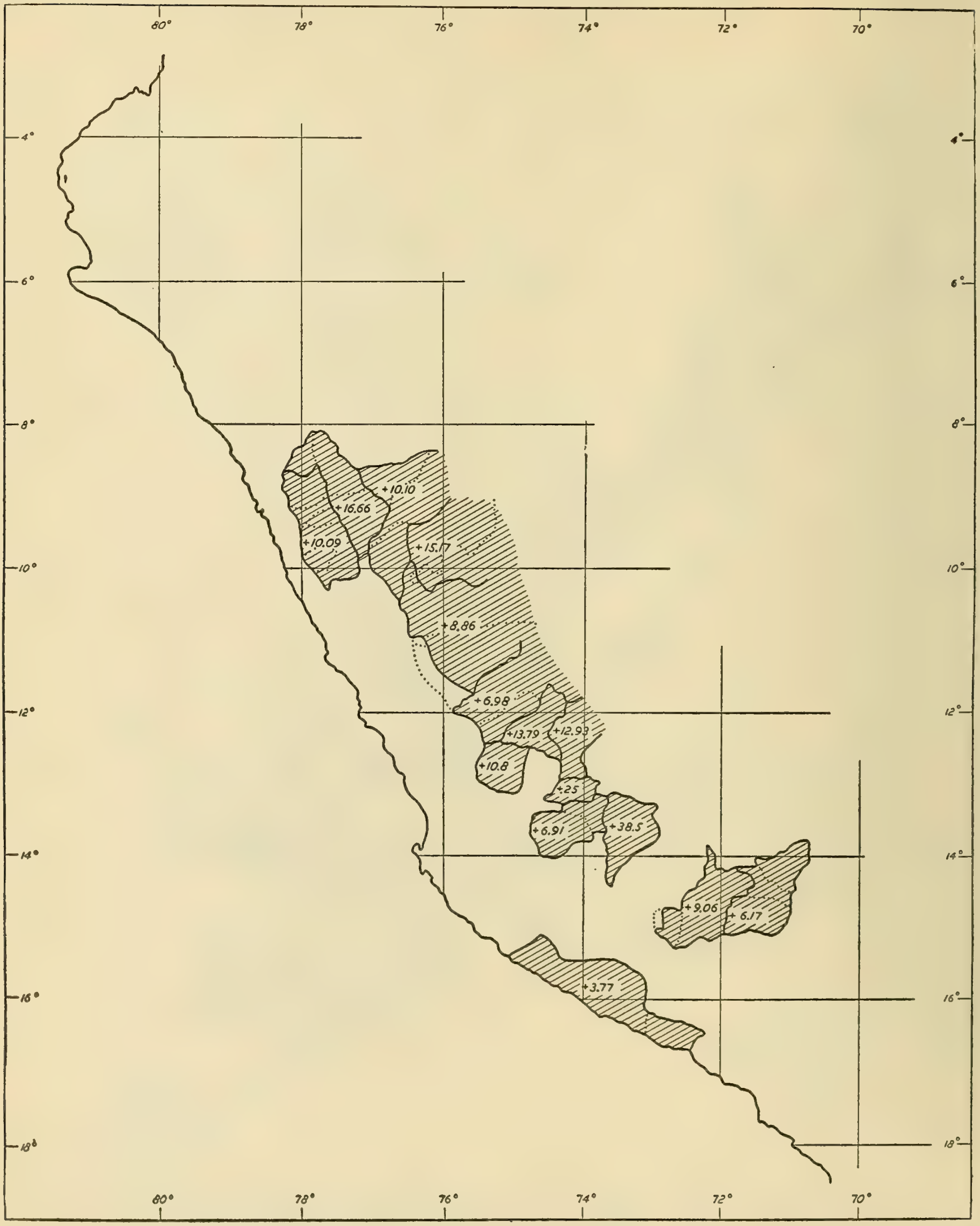
These changes in the growth pattern of the two castes, plotted over nearly a century and a half, display and reinforce earlier conclusions. By rate of increase (map 20), the mestizo population



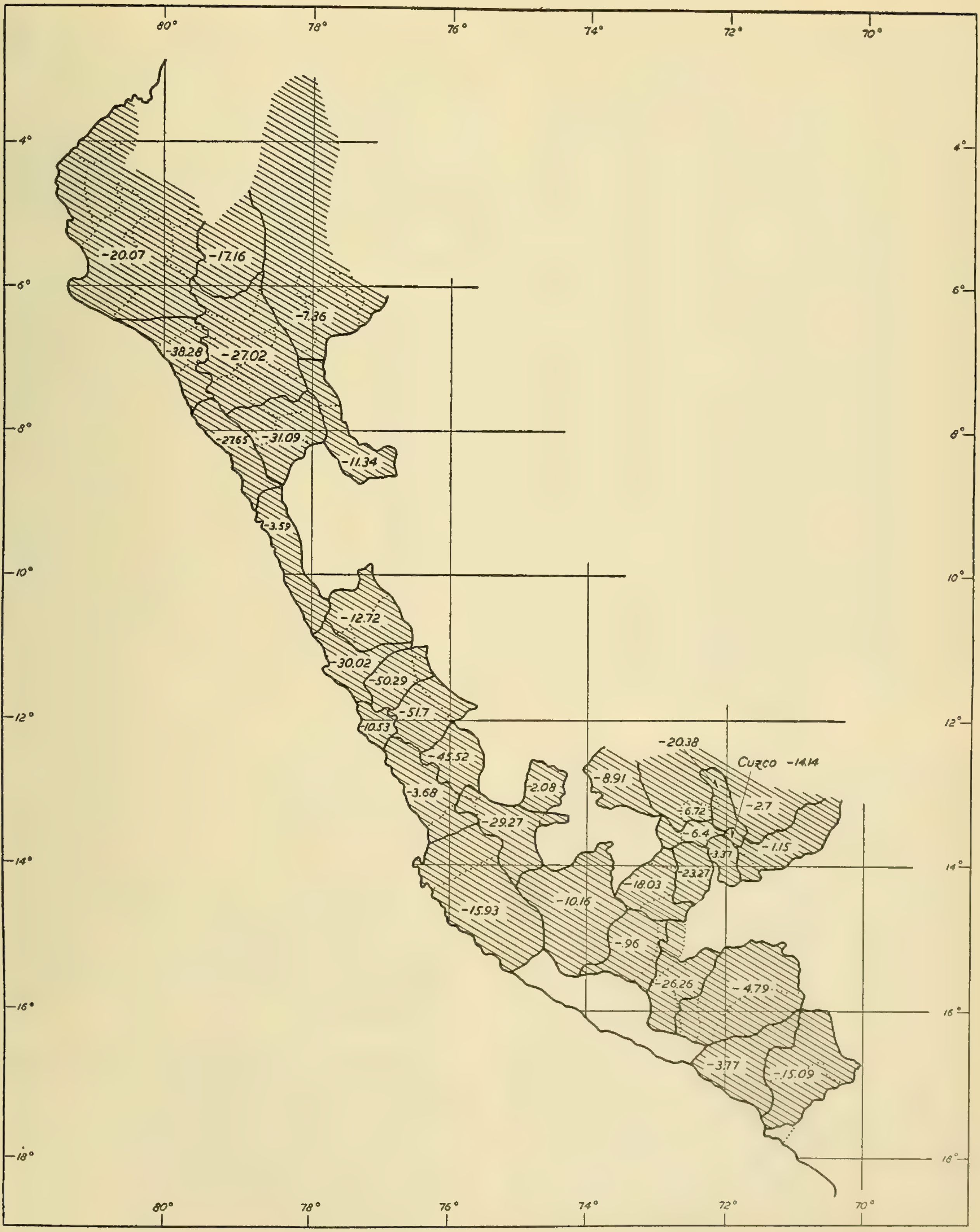
Map 17.—Provinces in which Indian percentages increased during the period 1795–1876. The increase per hundred population is noted in each area. Dotted lines show new provincial divisions during the period. See key to provinces in map 1.



Map 18.—Provinces in which Indian percentages decreased during the period 1795–1876. The decrease per hundred population is noted in each area. Dotted lines show new provincial divisions during the period. See key to provinces in map 3.



Map 19.—Provinces in which Indian percentages increased during the period 1795–1940. The increase per hundred population is noted in each area. Dotted lines show new provincial divisions during the period. See key to provinces in map 1.



Map 20.—Provinces in which Indian percentages decreased during the period 1795–1940. The decrease per hundred population is noted in each area. Dotted lines show new provincial divisions created during the period. See key to provinces in map 1.

came to occupy nearly the entire coast. The north also became dominantly mestizo. The southern highlands are interlaced by broad bands and zones of mestizo increase. The Indian world (map 20) is clearly defined by the central highlands, and by substantial portions of the south highlands. Most striking is the mestizo gain in the central highland provinces of the Pacific watershed: Cajatambo, Canta, Huarochirí, and Yauyos (map 20). The Indian highland block shows its most integral aspect from Conchucos to Huanta (map 19). Farther south and east this Indian block is fragmented. In the south only Andahuaylas has notable increase by Indian percentage. Chumbivilcas and Tinta are separated from the remainder of the Indian block by a broad belt of mestizo increases. On the whole, the Indian world shows its center of gravity in the central and eastern highlands. It is regrettable that the eighteenth-century figures for the Department of Puno are lacking. Were the rates of change available for these provinces from 1795 to 1940, we should behold another evidence of the way in which, without measurable biological changes, the caste proportions favor Indian survival only in the less densely populated sections of the altiplano of Puno (see map 15).

CONCLUSION

In general, the trend of Indian increase that held until 1876, was reversed between 1876 and 1940, when mestizo populations became more numerous and more extensive, and more rapid in growth than the Indian component. The process can be continuously documented with reasonable accuracy in the provinces listed in table 9. Undocumented are the provinces of the Department of Puno, lacking in the census of 1795, and certain other provinces, for which the tax registers of 1826–54 are still unlocated (map 3). Also without continuous documented history are the montaña provinces where no head count was seriously attempted until 1940. It will be seen from maps 19 and 20 that the area for which continuous documentation is available, includes about two-thirds of the entire country. The totals by period are therefore not absolute, and they are not accurately representative of the total trend. This total trend, however, cannot now be known. Our figures give its general direction.

In essence the Indian component of Peruvian population gained in strength throughout the country from the end of the eighteenth century until the third quarter of the nineteenth century. Since 1876 the Indian component has lost numbers, relative to the total population, until in 1940, the Indian population had become a minority approaching but 40 percent of total, in the documented areas (fig. 1).

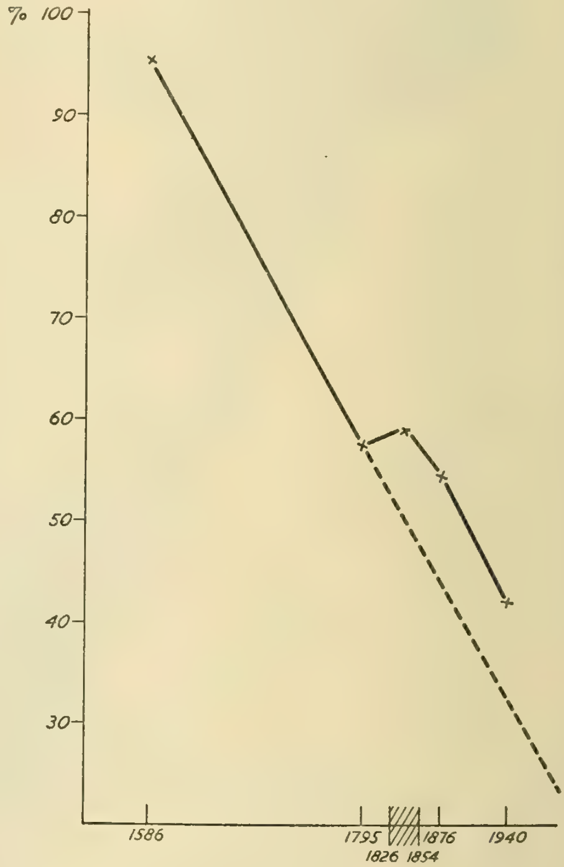


Figure 1.—The Indian caste, 1795–1940, by absolute numbers for the territory as of table 9. Dotted line continues Colonial rate of decrease after 1795, for comparison with actual rate of percentage decrease shown by solid line.

An estimate of 1586, published in 1648, states that the non-Indians of the Viceroyalty of Peru numbered 53,000 among 1,049,766 Indians (Diez de la Calle, 1648, f. 18a). Assuming that the area covered by this count of 1586 was roughly equal to the area covered by our limited counts from 1795–1940, the percentage of Indians may be taken in 1586 as about 95.2 percent. Between 1586 and 1795, no other counts classified

TABLE 9.—*Indian counts compared, 1795–1940, by provincial units as of 1795* (*cf. maps 19, 20*)

Province	1795		1826–54		1876		1940	
	Total	Indians	Total	Indians	Total	Indians	Total	Indians
Abancay	[1] 25,259	[1] 18,419	8,276	6,570	16,449	8,226	36,122	24,028
Andahuaylas	12,020	5,000	22,850	14,899	48,100	26,167	107,726	86,289
Anta	--------	--------	17,594	14,989	21,668	15,292	39,377	27,797
Aimaraes	15,281	10,782	28,638	18,776	25,330	10,443	50,084	26,301
Cailloma	13,905	11,872	21,522	19,343	20,220	16,796	30,210	22,734
Cajamarca	[2] 62,196	[2] 29,692	42,762	22,787	82,538	27,730	190,863	39,541
Cajatambo	16,872	10,500	24,799	15,599	31,035	20,399	52,307	25,929
Calca	6,199	5,519	18,425	16,853	14,086	11,017	33,778	23,190
Canas	34,968	29,045	36,109	33,119	35,866	33,720	58,264	53,654
Canta	12,133	10,333	9,433	7,013	16,650	14,978	27,965	9,751
Castrovirreyna	9,365	8,385	14,348	11,654	14,802	14,686	47,374	28,310
Chachapoyas	25,398	12,503	18,426	10,005	34,284	18,201	65,065	13,266
Chancay	13,945	7,500	13,943	10,512	36,440	17,903	128,944	30,634
Chota	--------	--------	53,775	19,859	98,314	31,409	214,189	8,073
Chumbivilcas	15,973	11,475	19,048	16,952	29,389	22,753	54,905	41,487
Conchucos	[3] 25,308	[3] 9,899	44,110	23,945	65,566	24,322	101,978	55,063
Cotabambas	19,824	18,237	21,979	15,614	28,646	19,845	64,182	44,103
Cuzco	31,982	14,254	40,000	18,720	23,108	9,455	54,631	16,622
Huamachuco	38,150	17,117	43,058	18,762	43,519	19,340	85,798	20,178
Huamalíes	14,234	8,957	17,889	8,768	44,380	23,443	115,072	76,735
Huamanga	25,821	20,373	18,167	16,758	29,905	26,331	51,509	45,184
Huancavelica	5,146	3,803	18,001	14,285	50,106	39,139	117,743	97,446
Huánuco	16,826	7,598	14,534	9,048	34,601	23,698	118,952	71,769
Huari	--------	--------	42,661	9,327	59,766	20,152	89,807	55,379
Huarochirí	14,024	13,084	14,258	13,394	14,397	13,027	36,663	13,823
Huaylas	40,822	20,935	61,642	30,881	109,823	62,335	172,360	105,775
Ica	20,576	6,607	7,033	4,754	37,789	17,982	99,393	16,082
Jaén	[4] 6,200	[4] 3,047	7,345	2,214	12,626	6,166	44,684	7,959
Jauja	52,286	28,477	93,033	48,927	125,259	70,732	258,192	153,843
Lima	62,910	9,744	65,116	9,690	120,994	26,414	562,885	27,944
Lucanas	15,725	12,700	13,843	11,002	23,852	17,056	69,867	49,777
Parinacochas	16,011	8,475	20,166	12,713	26,204	17,816	40,431	21,012
Paruro	20,236	15,034	17,732	15,965	16,800	9,921	29,133	20,661
Pataz	13,508	4,627	17,355	7,476	29,244	19,763	50,706	11,619
Paucartambo	12,973	11,229	11,720	10,937	14,086	12,211	28,666	24,693
Piura	44,491	24,797	53,815	30,943	135,615	79,792	434,314	154,890
Quispicanchis	24,337	19,947	26,778	23,033	37,938	29,814	75,618	60,223
Santa	3,334	873	2,159	415	18,639	5,584	33,955	7,672
Tacna	18,726	12,820	20,305	12,579	36,009	21,807	36,349	18,963
Tayacaja	13,161	9,020	20,345	15,618	38,161	27,098	84,059	69,203
Trujillo	12,031	4,577	7,211	4,164	32,559	10,622	116,682	11,600
Urubamba	9,250	5,164	15,089	9,568	26,870	15,550	56,801	29,178
Yauyos	9,574	8,005	14,858	13,563	15,075	13,784	26,675	10,161
Total	850,980	490,515	1,100,150	651,993	1,776,708	972,919	4,194,278	1,758,541
Percent	--------	57.64	--------	59.26	--------	54.76	--------	41.93

[1] Includes Anta. [2] Includes Chota. [3] Includes Huari. [4] Figures of 1788.

by caste are known. The two figures for 1586 and 1795 do, however, yield a measure for the process of caste formation during the Colonial era. When the percentages are plotted together with those of the Republican era, as in figure 1, certain conclusions suggest themselves. By contrast with events since the Wars of Independence, the three centuries of Colonial rule show that the non-Indian caste grew more rapidly than it has grown since 1795. In other words, the Colonial attitude toward passage from Indian to non-Indian caste may be described as more relaxed and more permissive than since Independence. In the second place, and by extrapolation, it appears that the Colonial rate of caste-change, had it prevailed after 1795 unchanged to the present, would have reached the caste percentages of 1940 in 1876. The dotted line in figure 1 illustrates this notion. By the same token, the Indian population of Peru would today be less than 30 percent of the total, instead of nearly 42 percent.

To attempt prediction on the grounds of such records and deductions is impossible. The evidence we have is that Peruvian population composition is a social process and not a biological one. In the course of this process the two dominant castes exchange positions of dominance and increase at irregular and unpredictable intervals in the recent past, and in unexpected magnitudes. The governing factors in the process are probably economic and ideological, and in no case biological, where caste is involved. It is not unlikely that among the conditions favoring Indian increase and dominance, are local conditions of economic disintegration and impoverishment, and of geographical isolation. Also relevant is the need of a society approaching industrialization, for a large reserve of cheap and rootless labor. Intervening here, a romantic ideology of Indian rural existence has the paradoxical and unintended effect of hardening the caste boundaries between the Indian and the mestizo. Such is the literary, artistic, and political movement of "indigenismo" in twentieth-century Peru, which, by lamenting and publicizing Indian dispossession and Indian misery, reenergizes a racial concept of Indian status instead of dispelling it.

It is too soon to appraise the part that has been played by "indigenismo" in recent decades. In practical life, the action of the *indigenista* artist and intellectual seems to have tended rather more toward the perpetuation of the Indian caste than to its assimilation by a modern citizenry.

At the present moment, by the evidence of our maps plotting Indian majority (maps 4, 6, 8, 10), and the maps of areas where Indian percentages have recently increased (maps 15, 19), the regions of decisively Indian character by caste standards, are five in number: (*a*) the mountainous heart of the Department of Piura; (*b*) the Departments of Ancash and Huánuco; (*c*) in parts of Junín, Huancavelica, Apurimac, and Arequipa; (*d*) the Department of Cuzco, especially its peripheries; and (*e*) the Department of Puno. These five "islands" form the Indian core of modern Peru. In the past, parts of these "islands" were less Indian than they are today. From the evidence of the nineteenth century, we may deduce that as these areas shrink or increase by Indian caste percentages, so will they have prospered or become impoverished. On the other hand, it is not only possible, but perhaps even desirable, that future census questionnaires should altogether abandon the effort to classify the population either by "race" or by caste. The distinctions among the castes are probably intensified rather than reduced by enumeration.

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To refer in all bibliographical detail to the MSS. consulted in this archive would be to anticipate and fall short of the catalog projected by the Director, Señor Federico Schwab. I therefore refer to the MSS. only by call-number in the tables. MSS. cited in footnotes are described at more length. The sections of the archive I have consulted are the following:

1. The manuscript tax registers of the period 1826–54 are classified in section R. This letter precedes the numbers of all volumes in the series. A card catalog at the archive classifies the volumes by date but not by province.
2. The file of laws, decrees, and official correspondence of the Ministerio de Hacienda is ordered by date and by Ministry section in the series O. L. No card catalog exists. The collection is easily consulted.
3. The Colonial section of the archive has been cataloged. (See Schwab, 1947.)

Archivo Nacional, Palacio de Justicia. Sección histórica.

The section called *Real Hacienda* is uncataloged. The following items bearing upon the subject of this paper were located:

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"Contribución general de industria y predios . . . Huancane . . . 1850."

"Matricula/de Castas de la Prov^a de Paruro/ actuada en el año de/1836." This document, though lacking population figures, includes an *informe* dealing with sales and assignments of vacant lands. The *informe* is signed by Mariano Joaquin Zuzurraga.

"Paruro/Matricula de indigenas/en el quinquenio de 1830/ por Dn Manuel Paz y Tapia/." 192 fos. This paper contains an *informe*.

"Libro/de/matricula de castas de/la provincia de Tayacaja/Año de 1830/." 125 fos. The document is signed by Manuel de Beramendi.

"Urubamba/de Indigenas/en el quinquenio de 1826." 165 fos. Signed by Tomas Coronel.

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5–7. "Revisita de la provincia de Chucuyto en el Departamento de Puno, Republica del Perú, practicada por su intend^{te} D^n Manuel Eusebio Bermejo, y comisionado Fizcal D^n Gregorio Prieto, el Año de 1826 . . . Tomo 1^o." 215 fos.

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ARCHIVO ARZOBISPAL, PALACIO ARZOBISPAL.

Six *legajos* of parish head counts from the Archbishopric of Lima, dating from the eighteenth and early nineteenth centuries, are available. With the kind permission of Rev. Dr. Rivarola, archivist, these papers were sorted and numbered. We have here referred only to 14 such registers from the Province of Canta, dated 1813.

Bogota

ARCHIVO NACIONAL.

With the courteous permission of the Director, Dr. Enrique Ortega Ricaurte, I was able to examine the uncataloged MS. materials bearing upon the episcopacy of Bishop Baltasar Jaime Martínez de Compañón. These materials are being transcribed by Dr. Ortega's staff. They will, when published, throw much light on North Peruvian history at the end of the eighteenth century. Of particular use to this study were the following items:

MS. 216. Martínez Compañón, Baltasar Jaime, *comp.* "Colección original inédita de mapas relativas al Obispado del Trujillo (Perú), retratos en colores y dorados de Arzobispos, Vireyes y otros personajes del Perú; planos de ciudades; cuadros sobre lenguas indígenas etc." 129 plates. 24 x 17 cm. 1782–88.

Uncataloged. "Provincia de Jaen de Bracamoros. Padron . . . del Numero de Almas, con Distinción de Sexos, Estados, Clases, y Castas, inclusos Parbulos que havitan en esta Provincia de Jaen de Bracamoros. Con arreglo a lo prebenido en la Real Orden de Diez de Noviembre de Mil Setecientos Setenta y Seis." Three sheets, dated 1778, 1779, and 1780. Signed Antonio Lopez.

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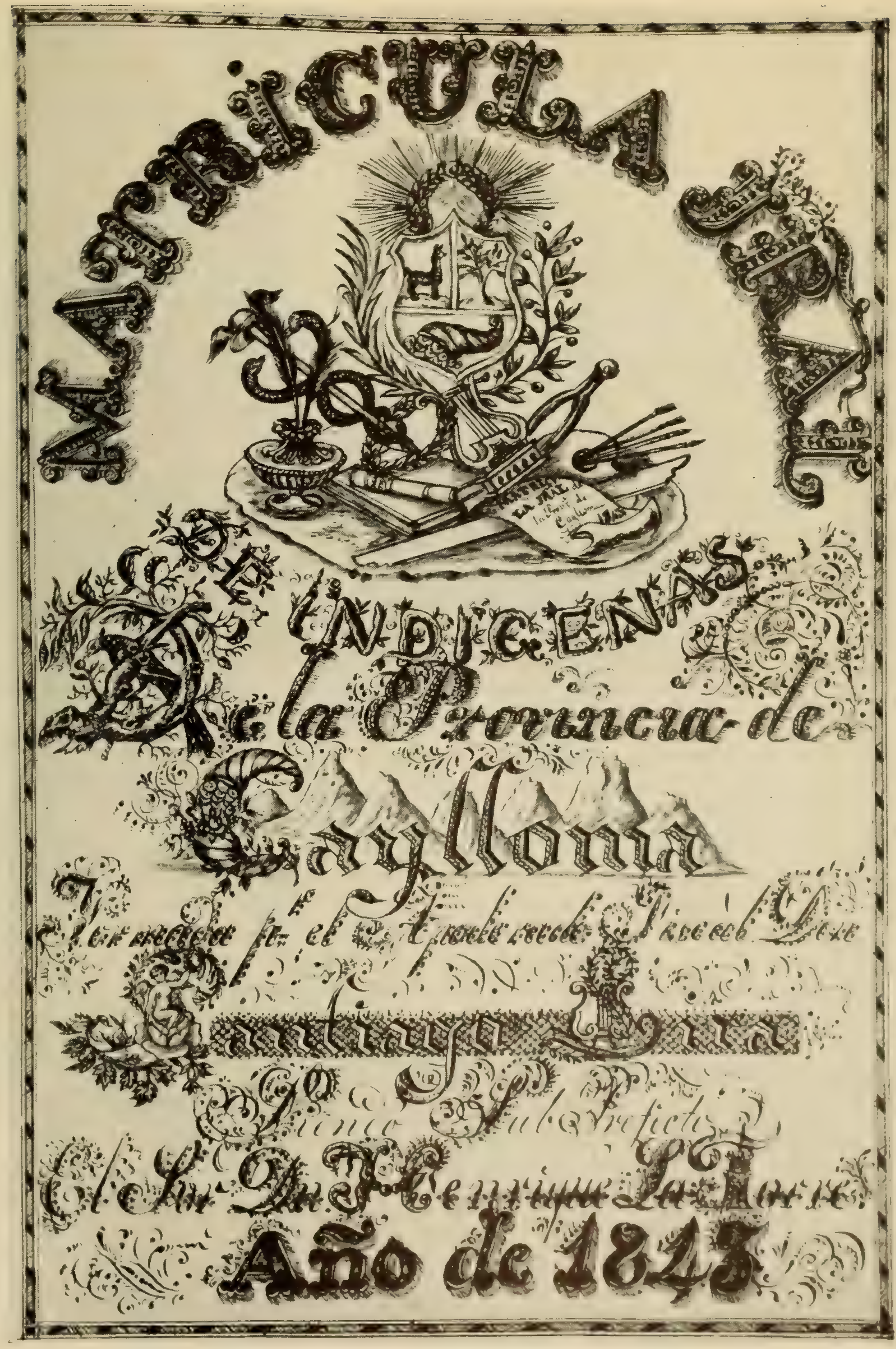
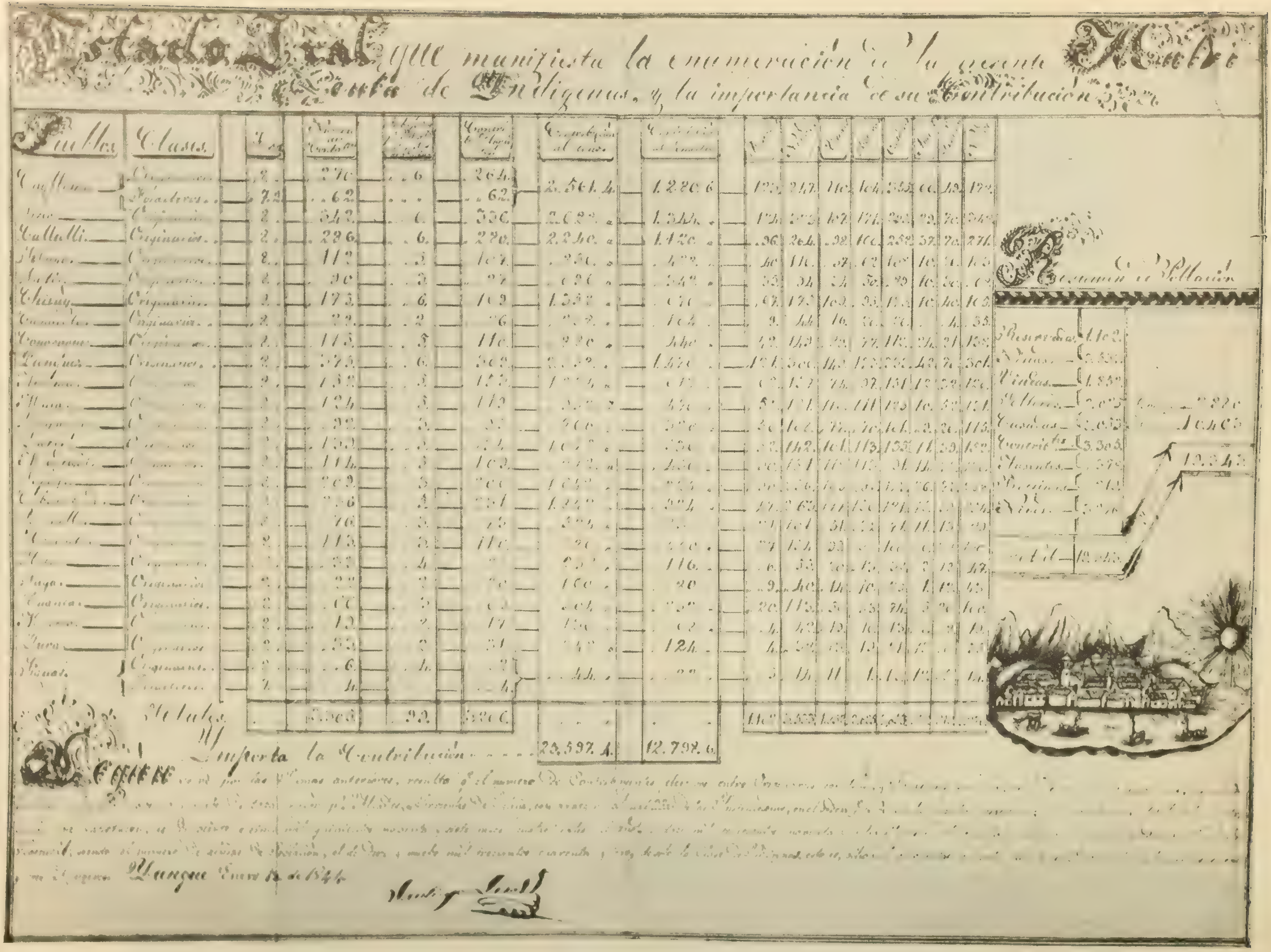


MATRICULA JERAL
DE INDIGENAS
de la Provincia de
Caylloma
Formada p.r el Apoderado Fiscal D.n
Santiago Diaz
Siendo Sub Prefecto
El S.r D.n F. Henrique La Torre.
Año de 1843

PLATE 1.—Title page of *Matricula Jral de Indigenas de la Provincia de Caylloma . . . 1843.* (AHMH, R.0284.) Pen-and-ink drawing.



Estado Jral que manifiesta la enumeracion de la presente Matricula de Indigenas, y la importancia de su Contribucion

Pueblos Clases

Importa la Contribucion .... 23.597. 4. 12.798. 6.

Resumen de Pobladores

Yanque Enero 15 de 1844

PLATE 2.—General summary. *Matricula Jral de Indigenas* . . . *Caylloma* . . . *1843.* (AHMH, R.0284.) The town of Cailloma appears at the right. Pen-and-ink drawing.

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INSTITUTE OF SOCIAL ANTHROPOLOGY
PUBLICATION NO. 15

INDIAN TRIBES OF NORTHERN MATO GROSSO, BRAZIL

by

KALERVO OBERG

WITH APPENDIX

ANTHROPOMETRY OF THE UMOTINA, NAMBICUARA, AND IRANXE, WITH COMPARATIVE DATA FROM OTHER NORTHERN MATO GROSSO TRIBES

By MARSHALL T. NEWMAN

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LETTER OF TRANSMITTAL

Smithsonian Institution,
Institute of Social Anthropology,
Washington 25, D. C., May 31, 1951.

Sir: I have the honor to transmit herewith a manuscript entitled "Indian Tribes of Northern Mato Grosso, Brazil," by Kalervo Oberg, with an appendix entitled "Anthropometry of the Umotina, Nambicuara, and Iranxe, with Comparative Data from Other Northern Mato Grosso Tribes," by Marshall T. Newman, and to recommend that it be published as Publication Number 15 of the Institute of Social Anthropology.

Very respectfully yours,

George M. Foster, *Director.*

Dr. Alexander Wetmore,
Secretary of the Smithsonian Institution.

* * * *

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PHONETIC NOTE

’=glottal stop, as in *mama’é*.
c=nasalized vowel, as in *tamuį́*.
ĭ=unrounded back *i*, as in *ihĭt*.
E=short *e*, as in *yaiÉ*.

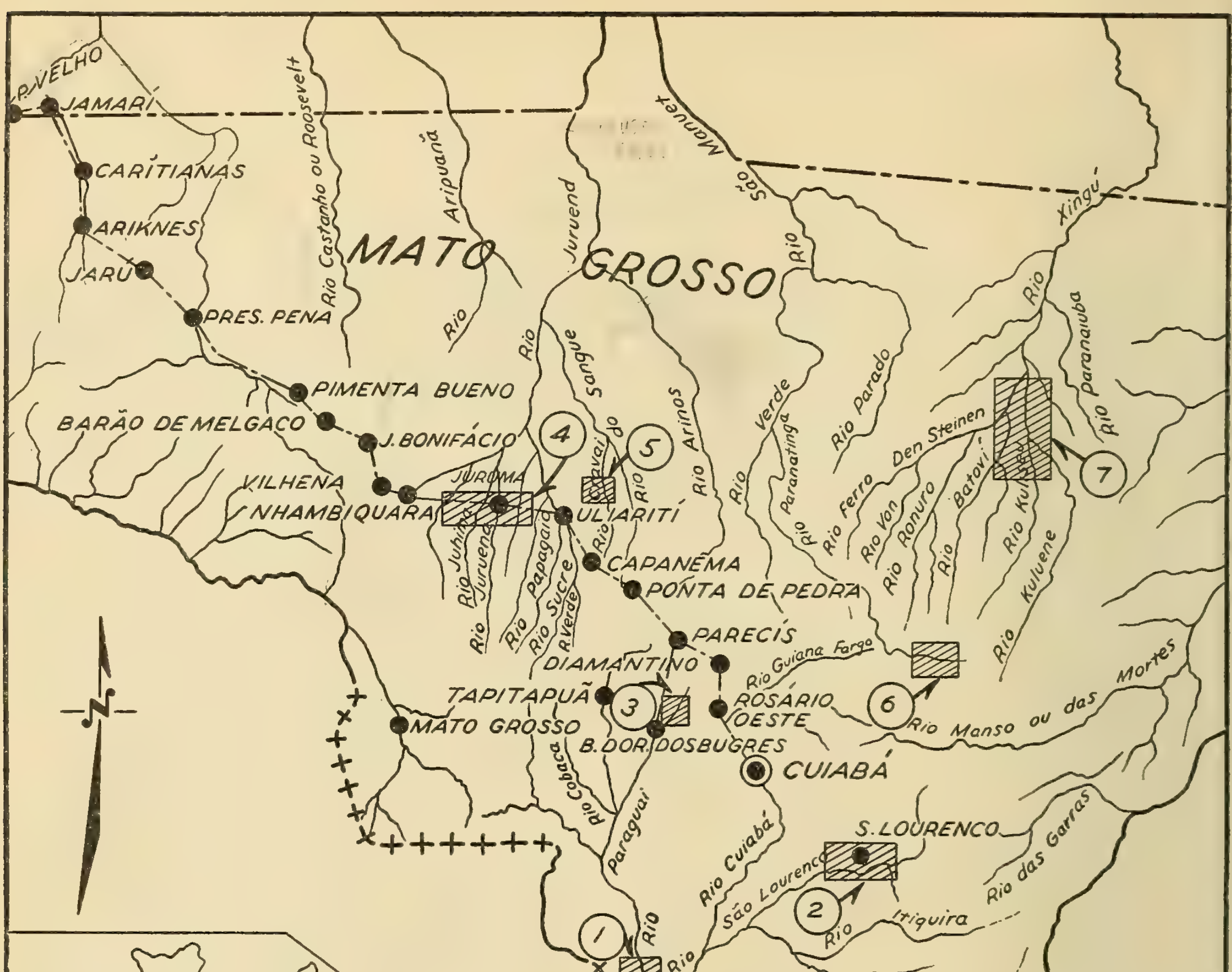
PREFACE

The field work on which this monograph is based was carried out as a part of the teaching and field research program in anthropology conducted jointly by the Institute of Social Anthropology of the Smithsonian Institution and the Escola de Sociologia e Politica de São Paulo, during June, July, and August of 1947, 1948, and 1949. In 1947, when I visited the Bacairí, Umotina, Paressí, and Bororo, I was accompanied by Fernando Altenfelder Silva, then a student of the Escola but presently a graduate student of anthropology at Columbia University. On the Xingú trip in 1948, I was accompanied by Fernando and Kaoro Onaga, also a student of the Escola. In 1949, when I visited the Nambicuara and Umotina I was accompanied by Kaoro. This field work was in essence a continuation of the research begun in southern Mato Grosso among the Terena and Caduveo in 1946 and 1947, the results of which have been published as Publication No. 9 of the Institute of Social Anthropology, Smithsonian Institution. Although the title of the present monograph reads "Indian Tribes of Northern Mato Grosso," it should not be interpreted as covering all the tribes in that vast region, many of which are still unidentified.

I especially wish to thank Dr. Cyro Berlinck, the director of the Escola de Sociologia e Politica, not only for his enthusiasm and sympathetic understanding of the research program, but for contributing the funds necessary to maintain the students in the field. I also wish to thank the staff of the Escola for their counsel, particularly Dr. Antonio Müller and Dr. Otavio da Costa Eduardo. I am particularly grateful to the director and field personnel of the Serviço de Proteção aos Indios whose assistance has been of immeasurable help in the field. I wish to acknowledge, too, the help of the personnel of the Fundação Brasil Central for their assistance while we remained at their camp in the Upper Xingú.

Finally, I wish to express my appreciation for the assistance and kindness extended to me by the American missionaries who are active in northern Mato Grosso, particularly, Rev. C. Thomas Young, Rev. W. L. Buckman, Rev. Robert E. Meader, and Rev. Emil W. Halverson.

And now I wish to thank my wife, Lois, for her critical comments and for typing the draft of this monograph.



MAP 1.—Northern Mato Grosso, Brazil, showing the location of tribes among whom field work was done. Numbered blocks refer to the following tribes or groups of tribes: 1, The Guató; 2, the Bororo; 3, the Umotina; 4, the Nambicuara; 5, the Iranxe; 6, the Bacairí; 7, the Upper Xingú tribes.

Indian Tribes of Northern Mato Grosso Brazil

By Kalervo Oberg

THE CAMAYURÁ

THE UPPER XINGÚ BASIN AND ITS PEOPLE

THE REGION

The Xingú is one of the great tributaries of the Amazon River, which, from its sources in the extensive sandstone plateaus of the Brazilian Shield, flows northward between the Araguaia-Tocantins and Tapajoz Rivers to join the Amazon near its mouth, west of Marajo Island. The headwaters of the Xingú include five major tributaries which join the Xingú proper at approximately latitude 12° south, thus forming a triangular drainage basin enclosed roughly between longitudes 52° and 55.5° west and latitudes 12° and 14° south. From west to east these tributaries are: Rio Von den Steinen, Rio Ronuro, Rio Batoví, Rio Kuliseu, and Rio Kuluene.

This region, which we might call the Upper Xingú Basin, is bounded on the south by the semiarid Planalto do Matogrosense, on the east by the Serra do Roncador, and on the west by the Serra Formosa. On its northward course the Xingú gradually enters the denser forests of the Amazon Basin, its descent being broken by numerous rapids. Within the Basin itself the five principal tributaries, plentifully stocked with fish, provide at least 1,000 miles of easily navigable waterway for canoes. These physical features, which give the Basin a degree of isolation and a wealth of resources not found in the immediate surroundings, account in great measure for the concentration of Indian tribes in the area.

At their sources the tributaries are clear and swift, but as they enter the Basin they become meandering, muddy streams, filled with sandbars in the dry season and overflowing their banks for miles around during the rains. The topography and vegetation of the Basin are in sharp contrast to the plateau in which the rivers find their sources. On the "serrado," or plateau, the forest, the so-called "galeria" forests, are along the margins of the rivers, while the flat plateau is covered with grass and scrub forest. In the Basin, however, the margins of the rivers are covered with dense growths of bamboo, vines, and flood-resisting trees. During the rainy season this short forest is covered with water, and during the dry season the trees and plants are able to grow by water obtained from the river. Back of this short forest margin is the flood plain ranging in width from one-half mile to many miles. During the rainy season it is covered with water, but during the dry season it is too dry to sustain forest life. On the flood plain, therefore, we find only burití palms, bushes, and grass. On the whole, the flood plain is open country. On the higher ground between the rivers which is not covered by floods we find the permanent forest. Compared with the "serrado," or savanna, the situation is reversed here. The permanent forest belt lies between the rivers on high ground while the flood plain is open. On the "serrado" the "galeria" forest follows the stream beds of the rivers, while the high ground between the rivers is open country.

This area is distinguished by sharply marked

APR 7

dry and wet seasons. Rains begin in the latter part of September and continue until April. During the rainy season thunderstorms are almost a daily occurrence. During the day the temperature ranges in the 90's and falls somewhat in the night. In January, however, there is a 2-week period when no rain falls and the temperature remains high. The dry season begins in May, and during June, July, and August scarcely any rain falls. During these months in 1948 no rain fell at all. The sky was constantly clear, the humidity high, and the prevailing winds were light easterly breezes appearing in the afternoons. At 7 a.m. the temperatures ranged around 60° F., rising at 2 p. m. to 90° F. During August and September the fires, caused by Indians clearing the land for planting, fill the air with smoke or "bruma seca" as it is called in Portuguese. The haze steadily increases until the first rains in September. When the rains cease in April the rivers slowly begin to fall, reaching their lowest levels in September, the drop on the Kuluene being about 12 feet. (For temperature graph, see fig. 1.)

Brazilian geographers define this area as marginal, for it lies between the upland savanna of the plateau and the lowland rain forest of the Amazon. The Upper Xingú Basin, however, does not stand out as a separate area but is part of the east-west belt of country which slopes northward from the Brazilian Shield. The plateau to the south has an average altitude of 500 meters and at the confluence of the Ronuro and Kuluene Rivers with the Xingú the members of the Roncador-Xingú Expedition gave the altitude as 250 meters. Geological maps indicate that the Upper Xingú Basin is predominantly Devonian sandstone. Outcroppings of stone are rare and what were seen appeared to be "canga," although pieces of reddish sandstone were seen among the Indians, these stones being used for sharpening axes and knives.

It follows, therefore, that the vegetation found in this transition zone would be a mixture of savanna and rain forest types. Such economically useful palms as the burití, tucum, acurí, bocaiuva, babasú, and buritizana are found in abundance. The burití, as usual, occurs in the well-watered bottom land where its fan-shaped foliage makes it conspicuous, the tall babasú on the hillsides where its feather-duster shaped top makes it quite outstanding among other palms. The babasú, however, is found only on the hilly fringes of the Basin. Among the forest trees the jatobá, the rubber tree, the cumbarú, the pau d'arco, the mameleiros, and the various trees of the jacarandá family are common. In late August the piuvas (jacarandá) begin to flower, some putting out bright yellow blossoms, others light purple. As these trees bloom before the leaves come out, the whole tree is one mass of flowers giving the forest a flower-garden appearance. A curious tree is the lixeira. Its short gnarled trunk and branches are covered with large rough leaves which the Indians use for planing or smoothing wood surfaces. American missionaries call it the sandpaper tree. The piqui with its oleaginous fruit and the latex-producing mangabeira with its delicious plum-sized fruit, no doubt, grow wild in this area although the ones seen were planted around the villages by the Indians. Important, too, are the cane plants and the vines. Among these the numerous species of taquara (bamboo), the camaiuva, and the uba are particularly useful to the Indians in the manufacture of arrows and flutes. Among the vines the sipó provides lacing in arrow manufacture while the timbó vine with its sweet-smelling flowers is used for drugging fish.

In spite of the varied mammalian life of the region, the Indians restrict themselves to the hunting of monkeys for food and a few other animals for their skins and bones. The following description of the animals found in the region is based on the work of José C. M. Carvalho.

Among the large animals are the tapir (*Tapirus terrestris* L.), the jaguar (*Felis onca* L.), jaguatirica (*Leopardus pardalis brasilensis*), the plains deer, "campeiro" (*Ozotoceros bezoarticus* L.), the forest deer, "mateiro" (*Mazama rufos* Illiger). The black jaguar and puma are also reported.

The wild pigs are represented by the peccary, "caitetu" (*Pecari tajacu tajacu* L.) and the larger "qeixada" (*Tayassu pecari pecari* Link).

The capybara (*Hydrochoerus hydrochaeris*) and the paca (*Cuniculus paca*) represent the larger rodents.

In addition, the region abounds in such animals as coati (*Nasua nasua solitaria* Schinz), the otter (*Lutra paranensis*), two kinds of anteater, the "tamandua-bandeira" (*Myrmecophaga tridactyla*

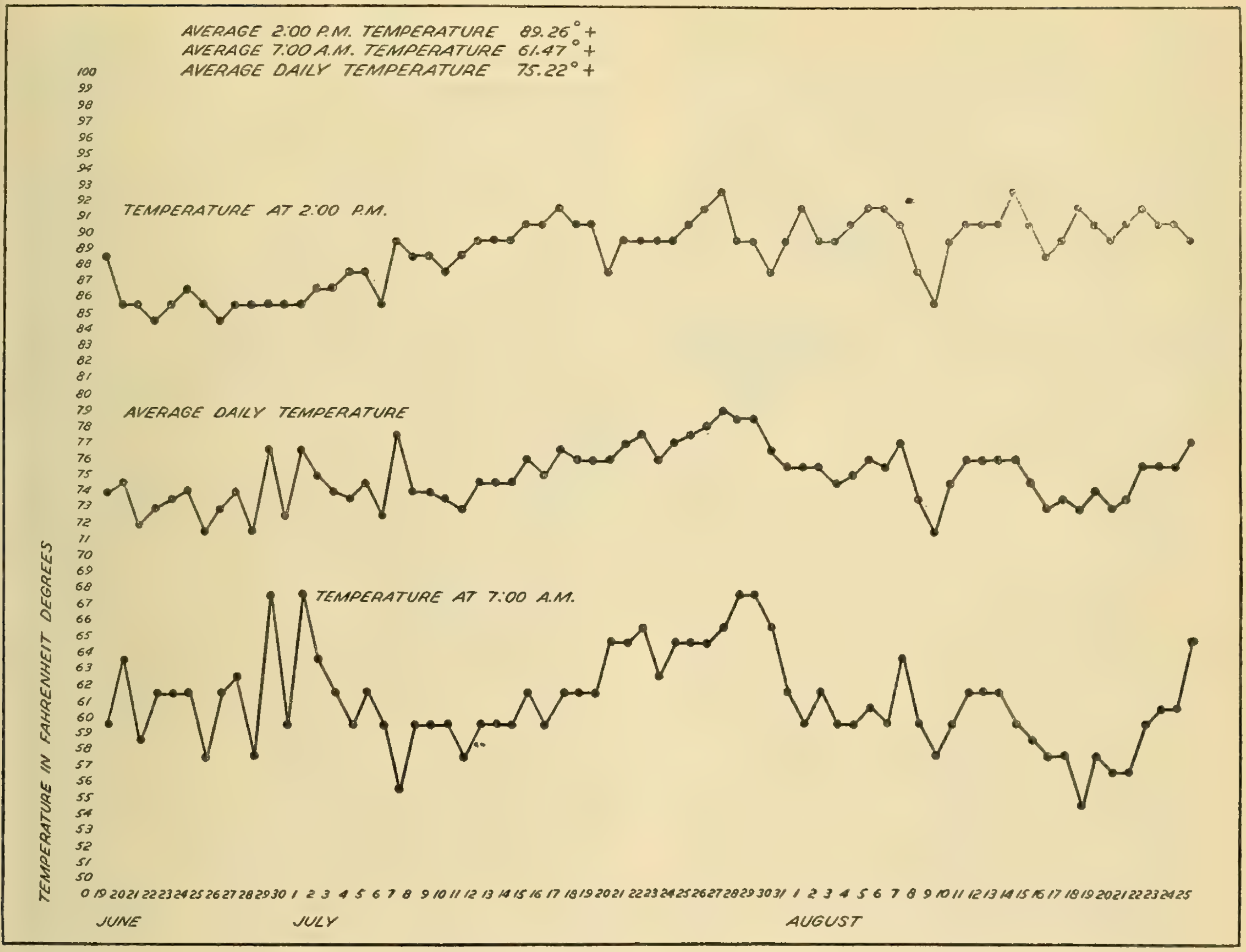


FIGURE 1.—Temperature readings taken at Jacarei Camp, Upper Xingú.

L.) and the "tamandua colete" (*Tamandua tetradactyla* L.). Among the numerous monkeys the *Cebus xanthosternos* (Wied) and the *Alouatta beelzebul* L. are the most common.

Among the birds which the Indians hunt both for food and their feathers are the "jacobim" (*Psophia viridis* Spix), the "mutun" or curassow (*Mitu mitu* L.), and the duck (*Cairina moschata* L.). The parrots, macaws, toucans, hawks, eagles, and buzzards are hunted and kept for their feathers.

The principal protein food of the Indians of the Upper Xingú is fish. Among the varieties most often found are the "bicuda," "avoadeira," "piau," "curimatã," "pacu," "traíra," "piranha," "cachorro," "pirarará," "pintado," "fidalgo," "barbado," and "matrinchã." In addition, the rivers abound in crocodilians and terrapins. The terrapins provide a plentiful supply of meat and in August their eggs are eagerly hunted and eaten by the natives.

Among the most unpleasant occupants of the area are the flies and mosquitoes, which, during the rainy season, are particularly disturbing. Although the most dangerous is the malaria carrier (*Anopheles* (*Nyssorhynchus*)), the ones which cause the greatest discomfort are the smaller gnats such as the "pium" (*Simulium amazonicum*), the "Mosquito-polvora" (*Culicoides*), the "borrachudo" and the small bee called "mosquito lambe-olho" (Carvalho, 1949, pp. 8–17).

THE PEOPLE

The Upper Xingú Basin is today inhabited by approximately 733 Indians belonging to at least four different linguistic groups. The Gé-speaking Suyá, who have been formerly reported as living in the area, are today located on the Rio Suyá Missú, a small eastern tributary of the Xingú some distance below the junction of the headwater tributaries of the Xingú proper. The Suyá are at present on a war footing with the Basin tribes and when a northeast wind was blowing the Camayurá would point to the smoke rising from their forest fires. In 1948 the Villas Boas, leaders of the Roncador-Xingú expedition, gave the following distribution of the tribal units and their numbers based on direct contact with the tribal groups:

Carib-speaking tribes:	
Calapálo	150
Cuicúru	140
Náhukwa	18
Matipú	16
Tsúva (at present living among the Cuicúru)	4
Naravúti (living in their own house in the Calapálo village)	5 or 6
Arawak-speaking tribes:	
Waurá	96
Iwalapetí (at present have no village but live scattered among the other tribes, planning to rebuild their village)	28
Mehinácu	110
Custenau (consisting of a woman and her son living among the Waurá)	2
Tupí-speaking tribes:	
Camayurá	110
Auetí	30
Trumai-speaking tribes:	
Trumai	25

Scientific knowledge about the Upper Xingú and its Indian inhabitants dates from the two voyages (1884 and 1887) during which Karl Von den Steinen descended the Xingú River. Later visits to the area are summarized in the Handbook of South American Indians as follows:

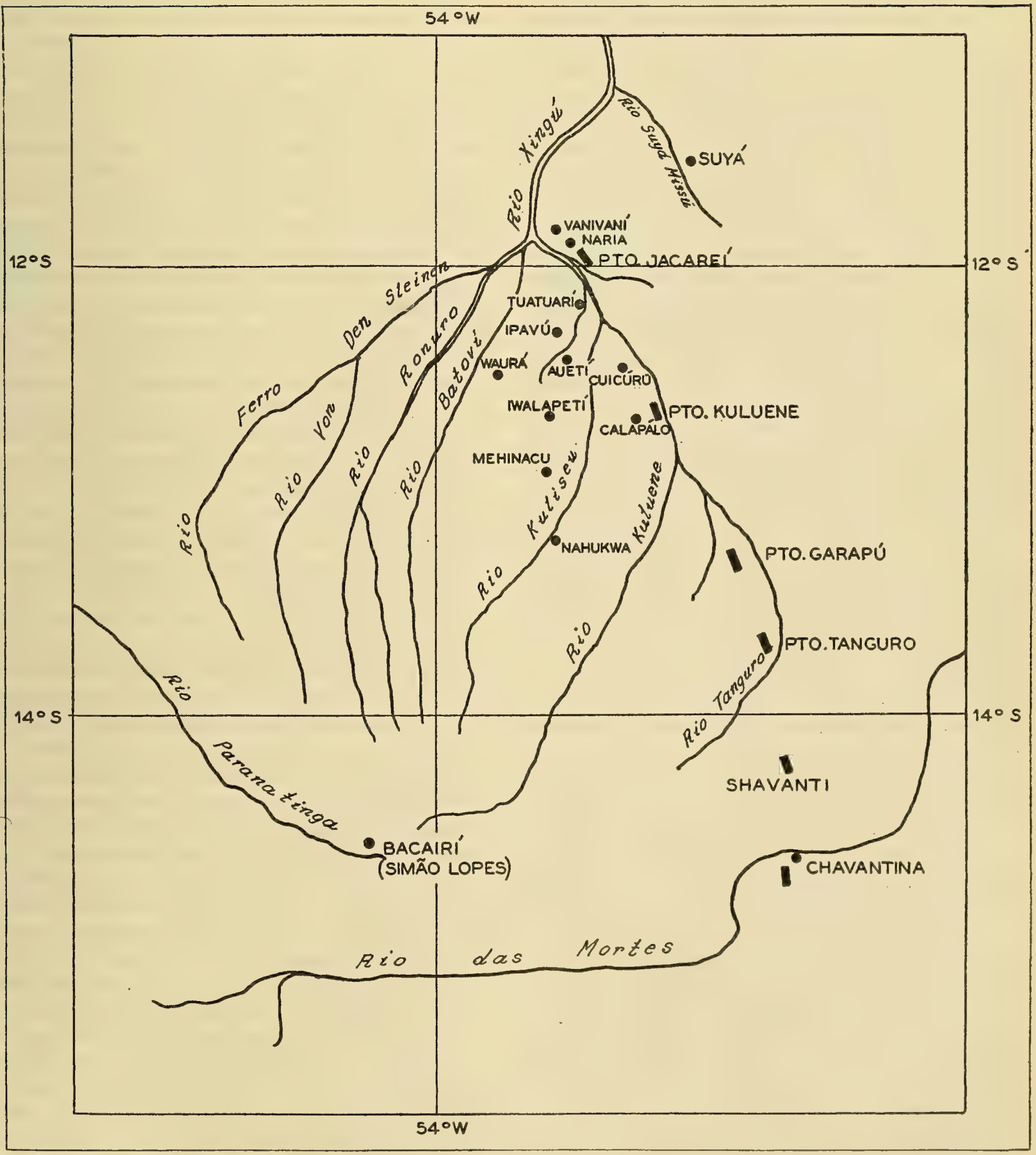
> Herman Meyer made an expedition in 1896 to the Kuliseu and Jatobá Rivers, and another in 1899, mainly to explore the Ronuro River. In 1900–1901, Max Schmidt traveled to the Kuliseu River. Later Hintermann (in 1924–25), Dyott (1928), Petrullo (in 1931), and Buell Quain (in 1938) studied the Upper Xingú River region [Levi-Strauss, 1948, vol. 3, p. 321].

The interest of the Brazilians themselves in the Upper Xingú and its inhabitants has been intensified in recent years with the establishment in 1942 of the Central Brazilian Foundation (Fundação Brasil Central). This Foundation, strongly backed and financially supported by the Federal Government, was created to open up the vast uninhabited stretches of central Brazil by building roads, establishing settlements, and by laying a series of airfields which would connect Rio de Janeiro and Manaus in a straight line. The spearhead of the Foundation which is to blaze the trail is known as the Roncador-Xingú Expedition. It set out from São Paulo under the command of Colonel Flaviano Mattos Vanique in 1943. By 1944 the Expedition had reached Aragarças on the Araguaia River where a permanent base camp was erected. The following year a camp and airfield were established at Chavantina on the Rio das Mortes.

The advance party of the Roncador-Xingú Expedition reached the Upper Xingú Basin in 1946, and in April 1947 an airfield and permanent camp were established on Jacarei Creek, a tributary of the Kuluene River. In 1947 and again in 1948 the Museu Nacional of Rio de Janeiro sent a number of specialists into the area to study the flora and fauna, to take physical measurements of the Indians, and to gather information about their cultures. In 1948 the author with two students, Fernando Altenfelder Silva and Kaoro Onaga, of the Escola Livre de Sociologia e Politica de São Paulo, spent 2½ months in the area, using Jacarei Camp as a base. Dr. Sylvio Grieco of São Paulo made trips into the area in 1947, 1948, and again in 1949, his interest being the study of native diseases and native psychology.

In addition to the scientific expeditions that have entered the area since its discovery by Von den Steinen, the Upper Xingú has held a fascination for missionaries, fortune hunters, and, more recently, for photographers and journalists, in the last case naked Indians being the great drawing card. American Protestant missionaries have made repeated trips into the area since 1926 and for some years the Reverend Thomas Young and his family were stationed among the Náhukwa. This mission was withdrawn in 1938 but in the last 2 years the Reverend Mr. Young has again been active in the area. At present there is a move to have the Serviço de Proteção aos Indios establish a post at Jacarei Camp on the Kuluene.

In the present century the Upper Xingú gained world-wide interest with the disappearance of Colonel Fawcett. In 1926 Colonel Fawcett, an



Map 2.—The Upper Xingú Basin showing the approximate location of tribal villages in 1948. Trumai villages, Vanivaní and Naria; Camayura villages, Tuatuarí and Ipavú. The other tribal villages are indicated by the tribal name alone. Rectangles in black indicate airfields and posts recently established by the Roncador-Xingú Expedition.

English engineer, accompanied by his son and another Englishman, set out from Cuiabá for the area, in search of the lost city of fabulous wealth reported by Moribeca in the eighteenth century. They never returned. Numerous search parties entered the region, some, like the American newspaperman, Thomas Winton, also never to return. Based on information given to Thomas Young by the Indians, the story of Fawcett is as follows:

> Fawcett and his companions reached the Upper Xingú and settled among the Cuicúru. Fawcett and his son married Indian women, each of the women giving birth to a child. Colonel Fawcett's child, a daughter, died, but his son's child, a boy, survived and grew up to be Tulipé, the so-called white Indian who for some years lived at the Indian Post of Simão Lopes but in 1949 was living in Cuiabá. The other Englishman died from an infection in his knee. After a year Fawcett and his son persuaded a number of Calapalo to lead them on in their search. The Calapalo relate that when the food ran out and they were far inside enemy territory to the northeast of the Xingú they tried to induce Fawcett to return. But he persisted in going on. The Indians thereupon killed the two white men by shooting them with arrows, buried them, and returned to their village. Although the Serviço de Proteção aos Indios sent in a party to verify the story and later had the story published, tales of this kind die hard. There are still people who believe Fawcett and his companions are alive somewhere in the jungles of central Brazil.

Today there are rumors of rich gold and diamond deposits in the area, and the Brazilian authorities are cautious about anyone entering the region. At least part of this caution is motivated by a genuine desire to protect the Indians against the demoralizing effect of a large influx of miners. Yet any kind of permanent contact in the area will affect the Indians physically. In 1948 whole villages were down with the common cold, which in many cases turned to pneumonia, resulting in death. As in other parts of Brazil, the common cold, measles, and whooping cough have devastating effects upon the Indians, who appear to have little resistance against pulmonary infections. The introduction of such diseases as syphilis and tuberculosis, of course, would quickly decimate the population.

To date the Indians of the Upper Xingú have survived physically and culturally owing to their isolation. As has been mentioned, the Xingú River in its main course is broken by many rapids which have so far effectively barred navigation from the mouth of the river to its headwaters. Until 1946 entry into the upper watershed was made overland from the south—a long and difficult journey by pack ox and mule or more recently by truck and then by canoe down one or other of the tributaries. With the establishment of airfields along the Kuluene since 1946, the region can be reached from Rio de Janeiro by plane in a single day. So far the air service has been provided by the Brazilian Army Air Force which has been serving the Expedition with flights every 2 weeks during the dry season. During the wet season the Fundação Brasil Central has serviced the area from Chavantina on the Rio das Mortes sporadically by their own two-seater Piper Cubs and Fairchild planes. As this plane service is official, permission to enter the region is controlled by the Brazilian Government. This prevents indiscriminate entry and undoubtedly will assist in protecting the Indians. Thus, so long as commercial airlines are kept out of the area the Indians will continue to enjoy a certain degree of isolation, the contacts with the whites being under the control and supervision of those who appear to have the interests of the Indians at heart.

The physical barriers which define the Upper Xingú as a drainage basin and have given its native inhabitants a high degree of isolation, also mark its boundaries as a social and cultural area. On all sides live other Indian tribes who are openly hostile to the Upper Xingú Tribes. To the east are the Gê-speaking Cayapó, Shavante, and Suyá; to the south and west the Tupí-speaking Juruna, Cayabí, Shukaramai, and other, as yet, unidentified groups. Raid and counterraid are still essential elements in the everyday life of the people. In May and again in July 1948, hostile Indians came at night within hearing distance of Jacarei Camp. The apprehension of the Indians, especially the fear shown in the faces of the women and children, was unmistakable evidence of the reality of war in their lives.

The internal structure of the Basin with its network of rivers, on the other hand, makes intercourse between the tribes easy. Not only do all the main tributaries meet at the apex of the triangle but during the rainy season the flooded lower portion can be crossed between the rivers, the canoes picking their way between the palms and undergrowth. In other words, there are no natural boundaries within the Basin itself.

Although the Indians in the Basin are split up into many tribes speaking languages belonging to three or four different linguistic families, the outstanding characteristic about their interrelations is that they live in peace with one another. In referring to the Indians of the Upper Xingú, the Brazilians speak of them as the Xinguanos, treating them as a social unit. American missionaries call them the League of Indian Nations, again stressing the peace and amity that exists among them. Although the Camayurá mention a time of troubles and the Trumai claim that they are newcomers from the south and had difficulties in the past, there is no doubt that the tribes today intermarry, trade, and gather at each other's villages for ceremonies. Settled villages and a wealth of resources, common enemies, easy communications, and tribal specialization in crafts no doubt help to explain these peaceful relations. Each tribe knows enough of the other languages to carry on trade and ceremonials. One Arawak-speaking Iwalapetí spoke Cuicúru (Carib) and Camayurá (Tupí) quite fluently, besides being able to make himself understood for ordinary purposes, after a year's practice, in Portuguese. Owing to the fact that practically all white visitors from the south used Bacairí canoe men and interpreters when entering the Basin, many Bacairí words have come into common use.

The social interaction and the resulting peaceful relations existing between the tribes is carried on within a cultural framework showing great formal similarities. The full extent of these similarities and differences is, of course, not yet fully known and awaits the more intensive study of all the tribes concerned. To say that the Upper Xingú Basin is a culture area may be overstressing the point. It may be but a subculture in the wider so-called Marginal Area surrounding the headwaters of the southern tributaries of the Amazon River. Yet all observers have been struck particularly by the similarities in material culture.

Brazilian observers call the Upper Xingú the "área do ulurí" (the ulurí area). This small triangular piece of bast worn by women over the pubis is certainly a common trait throughout the region. It is interesting to note that triangular ulurí-shaped pieces of pottery have been found in archeological excavations near the mouth of the Xingú River, thought by some to have been used for the same purpose. This trait is certainly distinctive and marks the Xingú tribes off from their immediate neighbors.

Other common traits on the material level are as follows: The large elliptical grass-covered houses built in a circle or oval around a central flute house, jatobá bark canoes, the keeping of "harpia" eagles in conical cages, large flat-bottomed pots and the openwork sieve for processing manioc, the general use of the openwork hammock, small zoomorphic flat pottery dishes, carved zoomorphic wooden seats, the spear thrower used in games, the bull-roarer used in religious ceremonies, the whistling arrow, necklaces of round and rectangular pieces of snail shell, the sacred flute, the predominance of fish over meat in the diet of the people, the intensive use of piqui, and the use of tobacco restricted to men who have had shamanistic experiences.

In connection with the nonmaterial aspects of the culture one might point out such traits as bifurcate-merging kinship terminology, cross-cousin marriage, the extended family as the household unit, respect toward in-laws, the chief as economic and ceremonial leader only, annual ceremonies connected with the dead and possibly related to the origin myth, and belief in guardian spirits exemplified by a variety of symbols.

It can hardly be said that these traits are restricted to the Upper Xingú. What appears to be true, however, is that each of the different linguistic units contributed its share of traits which have now become to a great extent common property to all the tribes, having been molded and combined to form a complex of traits which marks the Upper Xingú off from the neighboring areas.

Although all the Upper Xingú tribes are a riverain people, one seldom finds the villages located on the banks of the main streams. On the Kuluene, at least, only the Calapálo village is situated directly on the bank and visible from the river itself. The pattern of settlement is influenced by a number of circumstances. As the main tributaries approach their junction with the Xingú they flow through a flat plain, and, as has been mentioned, the flood plains along the rivers widen. Therefore, in order to build their villages above floodwater and to have cultivable land in the rainy season, the Indians are forced to move back from the main streams for a considerable distance.

Another condition of primary importance is that of timbó fishing. In order that the timbó drug have sufficient time to affect the fish, the slower the current in the stream the better. The main streams with their large volume of water and constant flow are unsuited for this type of fishing. The ideal areas are slow-flowing tributaries and shallow lakes and ponds left by the receding floodwaters. The Camayurá and Trumai who live on the lower reaches of the Kuluene build their villages in the headwaters of the small tributaries or near lakes. The tributaries, as they approach the Kuluene, build up dykes and sandbars at their mouths which tends to slow up the flow and in some cases to turn the lower part of the tributary into a lake. These arms are thus ideal places for timbó fishing and their headwaters flowing from high ground are also suitable places for permanent settlement.

Another consideration is defense against enemies, this being particularly true of the Indians living near the Xingú up which the Suyá and the Juruna come to make their raids. As one approaches the Camayurá and Trumai Villages the tributaries break up into lesser streams almost covered by overhanging vegetation. It is up one of these narrow approaches that canoes must find their way to reach the narrow path which leads to the village itself. The canoes used by the villagers are also generally hidden in the undergrowth so that very exact knowledge is required to find the path. It is true, of course, that the enemy sooner or later locates the village by the smoke from garden clearings and makes his approach overland. When enemies are reported in the area the villagers do not light fires at night, so as to prevent the enemy from locating the village in the dark. When an attack is imminent the inhabitants abandon the village at night, scattering in the surrounding forest where they sling their hammocks from trees.

The villages are only semipermanent. As the soil near the village becomes exhausted the Indians move to another location, taking into consideration not only soil but opportunities for fishing and defense. As piqui and mangabeira trees are planted around the villages, the old village site continues to be used until another orchard is established at the new site. The houses at the old village are not torn down, but continue to be used during the piqui harvest. For a long time the old village remains not only as a fruit-producing area but also as a ceremonial center, for the plaza of the old village is also the place where the dead rest and for whom the great annual ceremony of the dead is given each year. Both the Camayurá and the Trumai speak of their manioc and fishing village and their piqui village. This two-village type of settlement, however, is not a permanent pattern, for as soon as new trees reach bearing age the old village site is abandoned. The lower region around the tributaries of the Xingú reveals many places where only old and very large piqui trees grow, giving evidence that the Indians once lived there.

THE CAMAYURÁ AT JACAREI CAMP AND AT TUATUARÍ

Such, in brief, is the geographic, social, and cultural setting of the Camayurá, a Tupí-speaking tribe, which forms the principal subject of this study. Perhaps a more realistic introduction to the Camayurá can be given if the writer describes his first contact with them at Jacarei Camp and at the village of Tuatuarí.

A DC3 of the Brazilian Air Force landed us on Jacarei Airfield one forenoon early in June. Even before the plane had come to a halt, naked Indians could be seen scurrying from the camp to the airfield to meet the plane. As we stepped down, the first to greet us were the three Villas Boas brothers —Orlando, Claudio, and Leonardo, bearded young men who for 5 years had commanded the spearhead of the Expedition. As Fernando, Kaoro, and I assisted in the unloading of our supplies the Indians drew nearer, occasionally making low remarks to one another. Soon a man, naked excepting a string of beads around his waist, approached and touched me on the chest with his hand, "Como chama? (What is your name?)," he asked. Then in Tupí he launched into a long series of questions which when translated by one of the Villas Boas can be summarized as follows: "Are you married? What is your wife's name? How many children do you have? What are their names?" Then looking at Fernando and Kaoro he asked, "Are these your sons? Are they your brothers?" To the Indian the fact that we were not related seemed puzzling. His perplexity was increased further when he observed that Kaoro, who is a Japanese-Brazilian, was different in appearance from the rest of us. The question of Kaoro's kinship status was cleared up to some extent weeks later when an Indian, leisurely turning the pages of Time magazine, came to a picture of a Japanese. He jumped up shouting, "Kaoro irmão, Kaoro irmão (Kaoro's brother)" and went about the camp showing the picture to the whites and Indians alike. No doubt the Indians felt better now that it was known that Kaoro had a brother; that he was a member of a kinship group.

Thus, on the first day, we were made aware in a very intimate way of a basic characteristic of the people we were going to study—social relationships were kinship relationships. To know a man you must know his kinship ties. Throughout our entire stay in the Upper Xingú this question of a person's relationships kept constantly coming up. Every time an Indian saw a picture of a person in a newspaper or magazine he insisted upon knowing his or her name and the relationship to us. One woman eventually suggested that the pictures in newspapers might be *mama'é*, or spirits, similar in some way to the symbols of spirits which they themselves carve or paint on masks, posts, and other objects.

The buildings of the Expedition were located on the edge of the south end of the airfield. In the center of the camp was a huge old piqui tree. On one side of the tree was the main house, occupied by the Villas Boas and officials or visitors who happened to be in camp. On the other side of the piqui tree was a house occupied by the half-dozen "camaradas" or workmen who kept the airfield clean and were busy making preparations for the next move down the Xingú River. On both sides of these principal buildings were the storehouses, the dispensary, and the radio station. The cookhouse was about a hundred yards away near the bank of the Jacarei Creek. Back of these central buildings, forming a semicircular arc, were some half-dozen sheds put up by the Expedition to accommodate the Indians who visited the camp.

As Orlando led us to the main house he explained that the airfield and the camp were located on an old Indian village site. A group of Trumai were said to have been living here in the eighties of the last century when Von den Steinen made his two voyages down the Xingú River. As the area was thickly covered with piqui and mangabeira trees, many of which had to be cut down to make the airfield, it became clear that Indians had lived in the general area for a very long time. Later we examined a clearing some 300 yards from the camp. A pit dug into the ground revealed heavy and light-reddish potsherds to a depth of 2 or 3 feet. Some of the sherds appeared similar to the large heavy-rimmed pots now made by the Waurá. A curious phenomenon was a ditch leading from the village site to the Jacarei Creek. This ditch varied from 6 to 10 feet in width and from 4 to 6 feet in depth and was about 500 yards in length. Its badly eroded condition appeared to indicate considerable age. None of the Indians could remember anything about it or had any explanation of its use. As the ditch was well above flood level its possible use as a canal did not seem fit. It may possibly have been used by the former occupants of the village as a protection against enemies in their trips to the creek to fetch water and to carry their canoes back and forth. This site and others in the region should reveal, through archeological investigation, interesting facts about the early history of the Upper Xingú.

After we had put up our camp beds in the main house, the Indians trouped in to look us over in detail. At first it was a little embarrassing to be completely surrounded by about 30 naked men, women, and children, each of whom insisted upon opening our shirt fronts, putting their hands in our pockets, pulling out and examining each item, pulling up our trousers to feel the hair on our legs, or repeatedly untying and tying our shoelaces. After trying on my glasses and sun helmet one Indian put his fingers to my mouth, wanting to know whether I could pull my teeth out. False teeth evidently are one of the great wonders of the *Caraiba*, or white man.

This personal intimacy we found to be another characteristic of the Indians. As far as white men were concerned we were accepted as brothers, with everything this relationship implied. We were expected to share our food and clothing and to give the Indians whatever they wanted in the way of twine, nails, knives, axes, or other articles that took their fancy. On the other hand, the Indians were quite willing to share with us. If they were eating, they insisted on our eating with them. Most of the time our beds were loaded with manioc cakes, broiled fish, and turtle eggs. When we walked around the camp, both men and women insisted on walking with us with their arms around our waists. No doubt this intimacy was accentuated by curiosity and the fact that we asked little and gave much.

The total lack of privacy in the sense that we understand it was another characteristic of social intercourse to which we had to adjust. Twenty or more naked people living in unpartitioned houses and sleeping in open-weave hammocks can scarcely make for privacy. Men and women urinated without any attempt at concealment. Although they removed themselves some distance from the camp to defecate, digging a hole in the ground which was later covered, they showed no shame at being seen. Members of the Expedition had also seen married couples in the sexual act in their hammocks in broad daylight. Within the first week we were able to witness a childbirth, along with a number of boys and girls who happened to be near. Bathing in the river was a social act in which both Indians and whites participated. When we went to wash our clothes the Indians always wanted to take a hand.

Yet it would be a grave error to assume that the Indians do not have rules of conduct or attitudes of respect. The attitude of children, even when mature, toward their parents, particularly the father, was one of deepest respect. The behavior of in-laws was governed by strict rules of etiquette. Adolescent boys and girls when in puberty seclusion strictly avoided being seen in daylight. In other words, the rules of conduct pertained to behavior between individuals of defined kinship relationship and status and if broken, even accidently, would bring shame to the person breaking the rule. Being ashamed of parts of the body or basic biological acts does not exist, as among ourselves. As we were in the brother class, brotherly intimacy was both expected and accorded us. Later, when I insisted on a certain degree of privacy when writing and would not allow people to smear my bedclothes with urucú I became known as a father, and even on occasions as a grandfather when I acted in a rather peremptory manner.

An important factor in this intimate relationship between the Indians and the whites in Jacarei Camp no doubt was the kindly and indulgent attitude which the Villas Boas had toward the Indians. The success of the Expedition depended in a large measure upon peaceful and friendly relations with the Indians, who were used as guides, workmen, and interpreters when making contact with tribes to be met in the future advance of the Expedition. Furthermore, the Villas Boas were by temperament indulgent and friendly. Except when everyone had gone to bed, the living quarters were open to the Indians. They participated in every domestic act, in assisting in sweeping the dirt floor, fetching water, hunting, fishing, helping at the cookhouse, washing clothes and dishes. The eldest of the brothers, Orlando, who was the head of the camp, was particularly kind to the Indians, both in supplying them with food and tools and treating them with medicines. I shall always remember watching him writing his monthly report. Seated on a wooden bench, he was bent over a makeshift table and was calmly smoking a pipe and writing while two boys with their arms around him were seated on either side. In his lap he held a year-old child, with the mother bending over his shoulder with a few more children milling around his feet. To top it all, his favorite parrot sat on his shoulder and a bemteví (a yellow-breasted bird about the size of a robin) kept hopping on and off his head. Such consideration for the rights of others is indeed rare.

Intimate, often to the point of irritation, as the relation between whites and Indians were, there were clearly defined limits. To prevent the introduction of venereal diseases into the area the personnel of the Expedition were under strict orders to avoid sexual relations with Indian women. Members of the Expedition were selected for their sobriety and their capacity to endure long periods of inactivity under trying physical conditions. Visitors entering the region were similarly instructed by the authorities in Rio de Janeiro. The Villas Boas brothers by temperament and by their enthusiasm for the objectives of the Expedition were ideally suited for leading the advance party into the wilderness. The workmen were mulattoes from northern Brazil, accustomed to subsisting on manioc and fish, and with their deep sense of humor and a guitar appeared to be quite content in waiting for the word to advance. Protecting the Indian women against the sexual advance of the white men was made necessary by the ease with which the unmarried women could be approached. Any sexual advance was considered a proposal of marriage both by the girl and her parents. On more than one occasion workmen had to be shipped out for this reason. To guard the camp against nocturnal prowlings, two of the Villas Boas always slept in their hammocks under the piqui tree in the center of the camp.

I have stressed the life in Jacarei Camp, for it was here that we met members of every tribal group in the Upper Xingú and where much of our work was done. The camp was an attraction for the Indians. Here they received food, tools, medical help, and were able to see the airplanes at close quarters. Some of the men had the opportunity to take flights to the base camps at Chavantina and Aragarças or over new territory to the northwest where the Expedition was planning a new airfield. The Indians, especially the Camayurá and the Trumai who knew the surrounding territory well, gave valuable help in pointing out the location of still unknown Indian tribes and the best routes of advance. The relations between the Indians and the whites are now unique, and it will be a pity if the Upper Xingú should be opened up to an influx of miners and settlers, for, inevitably, disease and exploitation will follow, leading to the degradation and eventual decimation of the Indian population.

On the day we arrived the Carib-speaking Nâhukwa tribe was in camp, and it was with the Nâhukwa that we began our work. The language difficulty, which we encountered throughout our stay, prevented us from gathering much information. We were, however, able to get the kinship terminology, and one night the men played two sacred flutes together. Some of the women I noticed had wavy hair, a trait which we were later to encounter among members of the other tribes.

The first Camayurá that we met was Nilo, the eldest son of Tamapú, the Camayurá chief. The Villas Boas had requested that the boy remain at Jacarei in order to learn Portuguese and the ways of the Brazilians so that he could assist as an interpreter. Tamapú assented but insisted that the boy should be kept away from women. The first act of acculturation was to give the boy a shirt, a pair of pants, and the name "Nilo." The clothes Nilo considered as having decorative value only. In the cool of the morning while at his tasks he went about naked. In the heat of the afternoon when the young people painted themselves with urucú, Nilo put on his clothes, which were again taken off after dark. Nilo learned his Portuguese from the workmen in whose house he slept, and had learned enough to be of great use to us as an informant and interpreter. His Portuguese, however, was of a "caboclo" variety with a strong north Brazilian accent. For instance, when I would ask him to repeat in greater detail something upon which he had touched the day before, he would say impatiently in Portuguese, "Look, guy, I told you all about it yesterday."

Nilo was about 16 years old and had already been in puberty seclusion more than once, yet his father did not consider him mature, claiming that he got into too much mischief to be a man. At Jacarei Nilo also had his troubles. After repeated requests the Villas Boas presented him with a 22-rifle. Several days later he shot one of the Camayurá boys through the left arm and ribs. Although the boy survived, Nilo was in bad repute with the tribesmen as well as the Villas Boas. Some months later he and several younger boys broke into a warehouse and stole several blocks of brown sugar. This escapade angered the Villas Boas who complained to his father. The last time I saw Nilo he was whittling arrow foreshafts and learning to play the sacred flute behind the puberty screen in his father's house.

Another interesting character with whom we had personal contact throughout our stay was Canato. He was a handsome, well-built Iwalapetí Indian who had married Tipurí, the daughter of the Camayurá chief. He had been brought up among the Cuicúru and spoke their language well. Thus knowing Carib, Arawak, and Tupí dialects and a little Portuguese, he was of great use as an informant and interpreter. Of all the Indians we met, Canato was perhaps the wisest in the ways of the white man. He was always well supplied with odd pieces of clothing, raw sugar, and tools with which he carried on a lively trade with the other Indians. Canato is also the most photographed Indian in South America. As I have mentioned, the Upper Xingú, with easy access, has become a newspaper photographer's paradise. Since my visit to the Xingú I have seen Canato's picture numerous times on the covers of the illustrated magazines of Rio de Janeiro and São Paulo.

For those who might wish to work in the Upper Xingú or elsewhere in central Brazil where the Indians still live under native conditions, it is well to mention here that "rapadura" is the best medium of payment. "Rapadura" is a form of brown sugar that is prepared in bricks of varying sizes. It is put up in boxes and is easy to ship, and with an ax or machete can be cut up into small pieces. Men, women, and children accept it eagerly. When one visits an Indian village or encampment the first thing the Indians do is to look over the supplies, and one's prestige is high or low depending upon the quantity of "rapadura." This was the commodity which we used for paying informants, reserving clothing, knives, and other more expensive articles as gifts for chiefs and their wives. The Xinguanos also have expensive tastes in beads. Only high-quality red and blue beads are accepted. Acculturated Indians accept tin cans of any kind, for they use them in making containers and other articles. In the Xingú, only cans with firm lids are accepted.

We had not been in Jacarei Camp—which by the way means alligator camp—for more than 3 or 4 days when a messenger arrived from Tuatuarí, the Camayurá village, informing the Villas Boas that a bad attack of "grippe" had broken out and requesting their help. Next morning we made our preparations and were ready to leave after lunch. For transportation on the rivers the Expedition had built several large boats capable of carrying over 40 people. In one of these, Leonardo, the youngest of the Villas Boas brothers, Fernando, myself, Nilo, and Mariká, the messenger, set out. We had our hammocks and enough K-rations for 2 days. The boat was propelled by a 10-horsepower Swedish outboard motor with the Smithsonian 5-horsepower Johnson Seahorse carried along as a reserve. In 10 minutes we were out of Jacarei Creek and began winding our way up the Kuluene River. Along this stretch the Kuluene is about a quarter of a mile wide and at this time of the year is shallow and broken by sandbars.

As we sputtered along with Mariká in the bow pointing out the channel, which kept swinging from one bank to the other, we were able to observe the wildlife about us. The most numerous were the terrapins, which kept diving at our approach. From the overhanging undergrowth of the banks, parrots, macaws, and other birds rose to alight in the trees to chatter and scream. The sandbars were dotted with small gulls and here and there huge cranelike birds sauntered off as we neared. In the deeper bays large black Muscovy ducks were busy feeding, along with an occasional otter, and from the muddy banks an alligator would slide lazily into the water. Each time we got near some living thing Nilo's excitement would increase and he would insist that we stop and shoot. The Indians, as always, were armed with their bows and arrows, and the rest of us had our pistols in addition to a shotgun and a 44-caliber Winchester rifle.

After 3 hours we came to the tributary which led to the Camayurá village. The tributary, in contrast to the Kuluene, was deep, clear, and slow-flowing. We were now in the private domain of the Camayurá, as numerous fish dams and weirs could be seen along the banks. After another half hour the water became too shallow to operate the motor, and from there on we poled along an ever-narrowing channel with overhanging vegetation. Soon voices could be heard and we found ourselves near a bank crowded with boys and girls who had been warned of our approach by the motor and had come to meet us. After the boat was unloaded, the boys and girls picked up our things and we took to a narrow path which led us through woods and open patches of flood plain. As we neared the village we saw trees along the path on which were carved designs which we later found were symbols of *mama'é*, or spirits.

Suddenly the roofs of Tuatuarí could be seen over the second growth which surrounded the houses and in another minute or two we were in the village shaking hands and exchanging salutations with the Camayurá. Tamapú led us to his house outside of which his young wife and the other women of the house were busy baking *menyú* (manioc cake) and roasting sweetpotatoes. Young men and women painted with urucú and genipapo crowded around us asking for "rapadura." Offering cigarettes, I observed that the young men refused, whereupon Leonardo explained that only the old men who had had shamanistic experiences smoked. After we had ceremonially eaten *menyú* and sweetpotatoes we ate our K-rations and set up our hammocks.

Leonardo then set about attending to the sick. We found that about 75 percent of the villagers had "grippe." Whether this is a form of influenza or just a bad cold I do not know. It certainly affects whites worse than a common cold and among Indians it is a major killer. In any case, a dozen or so of the older people were hammock-ridden and running high temperatures. While Leonardo went from house to house taking temperatures, feeling pulses, and administering aspirin, Fernando and I had time to look over the village.

THE VILLAGE (IRETÂM)

Built on the edge of the forest belt which rises abruptly above the flood plain, Tuatuarí is surrounded by forest except to the south where it overlooks a broad stretch of flat, grassy plain covered by water during the rainy season. At first sight the houses look like huge dome-shaped haystacks set in a circle around a plaza about 100 yards in diameter. On closer examination, however, it becomes clear that the six large houses differ in shape, one actually being rectangular with a gable roof. More or less in the center of the plaza is the small half-built rectangular flute house. As it was still without a roof, the flutes were kept in one of the other houses. Young men, however, painted themselves in front of this house and nearby we observed them wrestling. We were thus not able to obtain a full account of the flute house and its function among the Camayurá. At the back of the houses were platforms 4 or 5 feet high used for drying balls of grated manioc and rectangular babracots for broiling fish. The platforms and babracots, however, are not permanent structures but are put up when occasion demands.

While the plaza is kept clear of weeds and litter and is beaten hard by the constant passage of the people, the area surrounding the village gradually merges into the second growth where gardens once spread, and later into the cultivated fields and finally into the virgin forest some 300 or 400 yards away. Near the village grow gourds, calabashes, cotton, and urucú, particularly along the paths that lead to the fields and to the river. Firewood is obtained from the garden clearings, where the fires never consume all the timber felled, and water is obtained from the river. In the dry season the river is about 30 minutes' walk from the village, but during the rains the river is only 200 yards distant.

These first impressions and elementary facts Fernando and I were able to gather before dusk. After the sun had set, Tamapú invited us to gather at a fire lighted in the center of the plaza around which the old men gathered to discuss plans for the following day. Low stools carved in the form of birds were brought near the fire for us to sit on. Long native cigars were rolled by the old men, lighted and puffed, while Leonardo in his broken Tupí explained that the sick should accompany us back to Jacarei for further treatment. After a couple of hours of discussion everyone retired to his hammock, and as there was little room in the houses for all of us I agreed to sleep out. Nilo obligingly set up two posts on the edge of the plaza for my hammock. For a long time I could not go to sleep, for never in my life had I heard so much coughing and hawking. It seemed that all the hundred or more people were coughing. It was a clear moonlight night, and I remember partly waking and thinking to myself that I must get up and turn off that electric light.

THE HOUSE (HOK)

The next morning while the Camayurá were making preparations for the journey to Jacarei we were able to make a closer examination of the village and the houses. The information gained on this trip, amplified by future studies, enables us at this point to give a general account of the Camayurá house and its construction.

Although most of the houses are ellipsoidal in ground plan, the rectangular type also occurs. It was difficult to determine whether the rectangular form of Tamapú's house and the half-built *jakui*, flute house, are original Tupian forms, for they have been built since 1947 with the assistance of the Expedition. However, as the majority of the Camayurá houses are ellipsoidal, as among the other Upper Xingú tribes, we are safe in assuming that this is the predominant house form. About the shape of these ellipsoidal houses we might also add this: the smaller the house the rounder it becomes. On the other hand, as the house increases in size it goes through a true ellipse to straight-sided house with rounded ends. This may show a development from a small beehive-type house to one which is basically made up of two beehive-type houses connected with straight walls and a gable roof.

Owing to the frequent occurrence of accidental fire, the houses do not last long. As sickness and death may also be attributed to the house, the owner may burn it and build another. The houses vary considerably in size. The largest house in Tuatuarí is 60 feet long, 30 feet wide, and about 20 feet high; the smallest 48 feet long, 18 feet wide, and about 18 feet high. Ignoring Tamapú's house, which is built like a Brazilian rancho—that is, with stake walls and a gable roof—the others conform to a basic structural plan.

First, the builder sets up the two central uprights which support the heavy ridge pole. These uprights are about 8 or 10 inches in diameter and are sunk into the ground to a depth of 2 or 3 feet. If the house is to be very long, 3 uprights may be used. Next he sets up the wall posts about 2 feet apart except for the doorway where an opening 3 feet wide is provided. These posts, which average 4 inches in diameter, are sunk into the ground, making a wall about 5 feet high. To the tops of the wall posts the builder then laces heavy plates going horizontally around the building. The slender rafters are now laid. Along the sides of the building they are laid parallel to one another from 2 to 3 feet apart; they are fastened at the upper ends to the ridge pole and at the lower ends to the wall plates but are permitted to extend down to the ground about 2 feet beyond the foot of the wall. The rafters forming the rounded ends of the building come together at the top and are secured to the end of the ridge pole. To the underside of the rafters extra poles are lashed about 6 feet apart, going horizontally around the roof. To strengthen the entire framework two pairs of cross beams were set up at each end to the uprights in the form of a cross, the upper ends being lashed to the rafters and the lower ends resting on the ground near the walls.

The whole frame is now covered with grass thatching, called "sapé" by the Brazilians. With the help of assistants the builder takes long slender poles about an inch in diameter and over each he bends a layer of sapé. As the grass is about 4 feet long, each pole will carry a layer of grass about 2 feet in width. Beginning from the ground these grass-covered poles are lashed to the rafters horizontally all the way around the building except for the two doorways. Then another set of poles is similarly covered by sapé and laid over the first band but about 8 inches above, all around the building. This process is repeated until the entire building is covered from the ground to the ridge. At the ridge one side is allowed to overlap the other by about 2 or 3 feet, providing an opening for the escape of smoke but at the same time preventing the rain from entering the house. The sapé is thus laid onto the frame like shingles, the only difference being that instead of narrow shingles each sapé-covered pole serves as a shingle.

As the rows of thatching overlap about 22 inches, the outside gives an appearance of a solid mass of grass about 2 feet in thickness. On the inside, the closely packed, smooth rows give an impression of neatness and finish to the house, especially in old houses in which the smoke has turned the thatching to a shiny black. Sapé is by far the best thatching. Occasionally palm fronds of various kinds are used but they do not last long. A good sapé roof, on the other hand, lasts for many years. During the dry season part of the thatching is removed to let in light.

In a completely covered house there are two doorways, one on each side. These low doorways are placed opposite one another, providing a passageway through the middle of the house. Doors are made by lacing together a layer of burití palm frond stalks. In cold weather and during storms the doors are closed. Doors are also closed when the head of the house does not wish to be disturbed or wishes to show his displeasure; and the women and children are behind closed doors when the sacred flutes are played.

Although considerable freedom seemed to exist as to where the occupants placed their hammocks, the prevailing custom was to sling hammocks from the two uprights to the wall posts at the ends of the house. Hammocks thus radiated in a semicircle from the uprights to the rounded end walls, leaving the center of the house free for movement. In large houses 5 to 8 hammocks could thus be slung, and as the wife always slings her hammock under that of her husband, from 10 to 16 people could thus be accommodated at each end of the building. Infants sleep with their mothers, but grown children have their hammocks slung near those of their parents. It is the task of the wives to keep fires going all night both for heat and to keep away the mosquitoes. These small fires are built next to the woman's hammock so that she can replenish the fire without getting out of her hammock. As the burning wood crackles and the people sleep naked, body burns are very common.

Each family keeps its personal belongings near its hammocks. Bows usually lean against the wall near the head of a man's hammock. The arrows are stuck into the thatching over the wall plate with the feather end protruding ready to be pulled out at a moment's warning. Gourds containing piqui oil and baskets containing feather work or twine are suspended from the wall plate or rafters. The center of the house is a common space to all the occupants. It is where women jointly process manioc and the large pots used for boiling the mash are placed, although in dry weather manioc processing and cooking are also carried on outside. In large houses a heavy beam is lashed to the two uprights well above head height and from this beam are suspended burden baskets containing additional gourds and small pottery vessels, dried seed corn, masks, feather headdresses, buritī fiber, dancing skirts, and other ceremonial gear. Dried manioc tubers, dried fish, and large gourds containing manioc meal are stored against the walls in the central part of the house in large burden baskets.

House building is always an affair in which the whole village participates. The task of collecting the poles, sapé, and lashings falls to the future owners, usually a group of brothers. When the building materials are gathered at the village, all the men participate in the actual construction. While the building is going on, the women of the house group prepare food for the builders and after the house is completed a feast is given in which everyone takes part.

The house posts have a *mama'é*, guardian spirit, called *tarawį́*. He is guardian of the house group. If many people die in the house *tarawį́* sends a strong wind, called *alsiki*, which blows down the house or gets *tatatuariáp*, the *mama'é* of fire, to destroy the house. Sometimes *tarawį́* makes his anger known to a *payé*, shaman, who then instructs the people to burn their house and build a new one.

GENERAL OBSERVATIONS

On this, our first visit to Tuatuarí, we had the opportunity to make certain general observations about the people which, amplified by future observations, will be summarized here. It must be mentioned at the outset that a certain amount of intermixture has taken place among the Upper Xingú tribes for a long time. Among the 110 Camayurá were 5 Suyá women captured in raids, 2 or 3 Waurá women and 1 Mehinácu woman, the wife of Tamapú, obtained in marriage, 3 or 4 Waurá men who had married Camayurá women, and 2 Juruna men. These individuals could be distinguished from the Camayurá proper. The Suyá women were shorter than the Camayurá women and had larger, more pendulous breasts. The two Juruna, who were brothers, had been captured when boys from the Suyá, who in turn had taken them from the Juruna. Both were short, powerfully built men with green eyes. The number of individuals of mixed blood was not ascertained. Nilo, for instance, was half Suyá. It was determined, however, that people with Suyá or Trumai blood did not have the social status of individuals of pure Camayurá descent or those who had Waurá fathers or mothers.

As an expedition from the Museu Nacional in Rio de Janeiro had taken physical measurements of the Camayurá in 1947, it was considered inadvisable to repeat this work. Pending the publication of the measurements taken by the Museu Nacional, there are available at present the measurements taken by the Von den Steinen expedition in 1887. (See Appendix 3, table 1, p. 131.)

Body hair on both men and women is scanty and is carefully plucked out when it appears. Men also pull out facial hair. Head hair is black, thick, and straight, although a few individuals show some waviness. Men cut their hair in a circle over the ears, and the women cut theirs across the forehead, leaving the rest to fall on their shoulders. Married men are tonsured, having a small round bare patch on the top of the head.

Both teeth and eyes deteriorate rapidly so that middle-aged individuals seldom have their upper incisors. Conjunctivitus and perhaps other eye ailments are common. Two men each had cataracts over one eye.

In contrast with the men, the women appear squat and ungainly. Mature women have little or no waistline, the torso being straight-sided. The stomach protrudes, and the pelvic region appears narrower than among white women. The legs are short and slender. The breasts of the women are round for a short period after puberty after which the dark area around the nipple soon becomes conical, with the nipple forming a sharp point; with age the nipples enlarge so that they include the entire dark area and hang down loosely. The breasts appear triangular in shape and are located well to the sides so that a woman can put them under her arm if necessary. Both sexes have small, rather broad feet and walk with the toes turned inward. Comparing their feet with ours was a source of great amusement to the Camayurá. They did not seem to understand that our toes were crowded together because we wore shoes, and they liked to show how their toes stood out separately even when their feet were free from the ground.

There were no fat or extremely thin individuals among the tribe, nor were there any individuals with gray hair. Only one woman appeared to have reached the age of 60, although an old man who died in 1947 claimed that he remembered the Von den Steinen expedition.

Excepting scarification, which leaves temporary corduroylike scars on the arms and legs, and the piercing of the ear lobes, there is no other form of body mutilation. It was said that on long voyages in the woods the men wore a penis sheath for protection.

Although the women wear a triangular ulurí over the pubic bone which, however, does not cover the pudenda, they are careful not to display themselves. They sit on one leg and hold the knee of the other leg in front of them. Although women generally wear an ulurí they do not feel ashamed without one. The only permanent article worn by men is a string of beads around the waist or, lacking beads, just a thin string made from burití fiber.

By 10 o'clock the morning after our arrival we left Tuatuarí, following a long line of naked brown bodies that wound its way over the open flood plain toward the river. The sick who were not able to walk were carried in their hammocks. Only a few families remained in the village. At the river there was considerable argument for everyone wanted to crowd into the boat. Eventually Leonardo and Tamapú selected about 30 of the weakest to accompany us, the rest being told to follow in canoes.

While the boat was being loaded I was able to observe the baggage which the Indians took along. Every man, of course, carried his bow and arrows. In addition, others carried small rectangular baskets in which they kept the twine, rosin, and other materials necessary for arrow making. Several carried manioc sieves, in the folds of which they had put large mutum and vulture feathers used for feathering arrows and for making headdresses. Everyone had his or her hammock and each family had a large openwork burden basket filled with dried manioc tubers, gourds filled with manioc meal, broiled fish, and dozens of baked *menyú*. Many of the children carried their pet parrots or parakeets in temporary baskets made from green rushes.

On the journey down the Kuluene there was not much said, because the people were sick although some were well enough to eat. Now and then a mother would assist a child while it defecated or urinated into a gourd vessel. Men would dip drinking water from the river, but always smelled the gourd first to make sure it was not a chamber pot. Some gourds were lost because the men dipped against the wash, and it jerked the gourd out of their hands.

Three hours later we were back in Jacarei, and after the Indians had established themselves in several of the sheds the task of medical treatment began. For weeks the Villas Boas were busy giving injections and pills. The doctor of the Expedition had come from the base camp on the Rio das Mortes with additional medical supplies and for some days took care of the more serious cases. It was interesting to note how stolidly both adults and children took injections. In some cases large doses of calcium in liquid form was injected into the hip, and as the syringe would not hold the full amount the needle was left sticking in the flesh while the syringe was being reloaded and screwed back on to the needle.

The contrasts in the life at Jacarei were thus striking in the extreme. Here the very old rubbed shoulders with the very new. Naked Indians practicing an ancient culture were being treated with penicillin, sulpha compounds, and other modern medication, a Piper Cub airplane nestled under the piqui tree in the center of the camp, and every night by radio we could tune in on the news from Rio de Janeiro, New York, or London, or could send messages direct to Rio and São Paulo as well.

As the Camayurá improved in health we began working with them, observing their everyday life and, with the help of Orlando, using first one and then another as an informant. On some days we accompanied the Indians on fishing trips, on others we followed them into the woods while they collected palm nuts, roots, and materials for making arrows. In return they watched us dress or undress, observed us eating, accompanied us as we took our daily baths in the river, and insisted on helping us with the innumerable tasks of camp life. After a month Tamapú and most of the Camayurá returned to Tuatuarí, and a few days later we followed, to observe them preparing their fields, repairing their houses, fishing with timbó, dancing, and wrestling—not to mention the details of domestic life.

We began our study by describing their economic life, by observing what they ate and how they went about obtaining, processing, and preparing their food products. The year-round staple foods, we soon learned, were manioc and fish, with various fruits, nuts, and terrapin eggs being used as they came in season. Meat formed a negligible part of the diet. We also learned that myth, magic, and religion are essential elements in economic activities. In the following pages these beliefs and practices are described as integral parts of the economic process.

AGRICULTURE

The following account of the agricultural activities of the Camayurá is based upon information gathered during the dry season, in other words, at a time when these activities were at their lowest ebb. This limited the direct observation of the full list of crops planted and the practices of cultivation. However, by observing what the people ate, what they had in storage, what was growing around the village, and what they were preparing to plant, a considerable amount of information was obtained. It can be said with assurance that the staple food crops include bitter manioc, sweetpotatoes, maize, and peanuts. Of these, manioc is by far the most important, for it is eaten the year round. No beans or squashes were seen and only once was a woman observed peeling cará tubers. Among the fruits, the piqui and mangaba are of great importance. A few banana plants were seen near the village, and also such nonfood plants as cotton, tobacco, urucú, gourds, and calabashes. From the forest the Camayurá collected bocaiuva palm nuts, coco babão, and tender palm shoots. Gray ashy-looking salt made by burning some marsh plant was observed. No doubt other plants are grown and other forest products collected for food, but the language difficulty made it impossible to question the Camayurá about them.

During the months of August and September the sky above the village is dark with the smoke of their clearings and one can hear the blows of the ax and the crash of falling trees in practically every direction. Shortly after sunrise groups of men and boys are seen going to the fields carrying tools, gourd vessels of manioc gruel, and cigarettes. The tools used today are the steel ax, the iron hoe, and the machete, which the Camayurá have obtained by barter from the Indians to the south, who, in turn, obtained them from the Indian Service Post on the Batoví River. During the last 2 years the Roncador-Xingú Expedition has added greatly to the supply of metal tools. Even yet, however, not every family has a complete set of tools, but as the field work is generally performed cooperatively, most of the tools tend to be used in one or two fields at a time. Old stone axes and digging sticks are still in existence but are kept more as heirlooms than as implements of use.

Clearing and planting go on more or less simultaneously. Even before the fires in a field have actually died out, manioc cuttings are set out among the stumps and half-burned trunks. Agricultural activity increases in tempo as the rains approach in mid-September. Sweetpotatoes, maize, and peanuts are the last to be planted. By this time the manioc cuttings have already begun to put out leaves and the task of weeding has commenced. Once the plants have a good start they are left to grow without further weeding. But the Camayurá does not forget his field. He watches it closely for signs of disease and blight. If the field becomes "sick" he will practice garden magic to cure it. Even during planting, offerings are made to the spirits of the manioc plant.

During the month of December when the garden plants are in full growth, the Camayurá leave the village of Tuatuarí and go to the old village of Ipavú for the piqui harvest. Here they settle for a month or two, repairing their houses, fishing in the lake nearby, eating fresh piqui, and preparing piqui pulp and oil for storage. At the end of the piqui season they perform the piqui ceremony after which they return to Tuatuarí for the garden harvest.

Like the planting season, harvest time is not an exact period but begins when some of the crops are ready for use. Maize comes in early, followed by sweetpotatoes. Manioc is ready for use after 7 months, but is left in the ground until needed. Even during planting time in August people were seen pulling up last year's manioc plants. As a rule, new crops come in during March. In April and May large quantities of manioc roots are grated and pressed into balls ready to be ground into meal. The rains end in April and, with the coming of clear skies and with an abundance of food, begin the ceremonial season, visiting, trading, and—until the coming of the Roncador-Xingú Expedition—warfare.

This, in brief, is the annual cycle of agricultural activities. Although the dry and rainy seasons are clearly marked, moisture conditions in the low-lying lands are such as to permit planting long before the rains come. The seasonal variations in temperature are small. These physical conditions, therefore, do not demand exact timing in the annual cycle of work, for planting can be carried on for 3 months and harvesting even longer. In fact, there is manioc in the ground ready for use throughout the year just as there is a continual supply of fish in the river. Storage activities thus are of minor importance and food is prepared in large quantities only for ceremonials and long voyages. Let us now examine more closely the even rhythm of agricultural activities in order to see how, in detail, they clear the fields, plant the crops, and harvest the produce.

MANIOC (TEMIŲ)

A statement to the effect that manioc is the principal food crop of the Camayurá indicates only in a minor way the role which this food plant plays in the lives of the people. It is only after one has observed the activities involved in its cultivation, the methods of preparation for consumption, its use as food, the ritual surrounding its cultivation, and has heard the myth celebrating its origin, that one begins to understand the Indian's attitude toward manioc, to grasp its real value and meaning as a culture trait.

When a visitor comes to Tuatuarí and after the chief has shown him the place where he can pitch his tent or hang his hammock, the chief's wife will pay a formal visit, presenting him with a thin circular manioc cake called *menyú*. Later, other important women of the village will approach, giving the same present. In all their nakedness the women will squat in front of the visitor as he eats some of the *menyú*, eagerly watching for some sign of appreciation in his face. At first the white visitor does not realize that this is a ceremonial act, that the people are offering him the very best they have in the form of food, for this baked cake is not the ordinary kind but is made from a mixture of meal and the fine starch flour which is obtained only after long, arduous labor. Once the white visitor realizes the significance of this act he will show his appreciation by eating the soft, sweet cake, still warm from the baking plate.

After several visits the white man will observe that all important guests are offered this special *menyú* and that considerable skill is required in getting the right texture and in baking it so that it is slightly browned on one side and left white on the other. He will also hear native comments about the women who are considered to be the best bakers, that women take great pride in this task, and that, usually, the chief's wife is accorded the honor of being the most skillful baker in the village. As he watches the women at work, he will notice that it is manioc which they are peeling, grating, pressing to remove the juice, rolling into balls, drying, grinding in graters, sifting, and baking into *menyú*, and that these tasks keep them occupied most of the day. He will observe that the central part of the house is always reserved for this work or special sheds are attached to accommodate the array of huge flat pots required for the processing of manioc and the preparation of manioc meal and flour. He will also notice that it is *menyú* which the men eat before going to their field work in the morning, which the fisherman, hunter, or traveler takes on his journey, and which the children eat during most of the day as a sandwich made by folding a piece of *menyú* around a slice of boiled or broiled fish. During the ceremonial season in May great quantities of manioc are prepared and served, not only as *menyú* but in the form of gruel mixed with sweetpotatoes and fish or boiled down to a thick gelatinous paste.

The Camayurá are never weary of talking about their manioc fields and their stores of dried manioc meal. Some families are specialists in growing and preparing manioc products and these specialists will visit their friends in other tribes, assisting them in growing or working manioc for which they get a portion of the product. Some night when the visitor sits with the old men around the fire in the center of the village smoking long cigars of native tobacco rolled in a leaf, someone will tell him of how manioc came to the world and how nearly the Camayurá came to losing this gift of the gods.

Long ago, after Mavutsiné, the creator, had made the forefathers of the Camayurá out of *camiuva* wood, he observed that they were hungry because they had no food. Mavutsiné then picked up a gourd and after pinning a feather on each side, began blowing tobacco smoke over it. As he blew, the gourd began to move and little by little it grew until it turned into the gull, *Pakoin*. "Go and make a field of manioc for the Camayurá," said Mavutsiné. *Pakoin* then made a long cord of great strength to which he fitted sharp stones to form an edge. This cord he threw around the forest, and when he pulled the cord he cut down all the trees. He set fire to the felled trees and for many days one could not see the sun, for the smoke was so thick. When the field was clean, *Pakoin* went to the river and called "pirarará," the dogfish. When "pirarará" appeared *Pakoin* told him to take his friends, the fish, and plant a field of manioc for the Camayurá. All night long the fish worked. In the morning the field was planted. *Pakoin* then told the Camayurá to guard the field against wild animals and to keep it weeded.

The manioc began to grow, and it grew and grew until it was very tall, and green, and beautiful. The storyteller's face will light up at this point as with word and gesture he tries to convey to the listener the size and beauty of this first great field in the mythical past of his people. His audience will mutter their assent. But the next instant their heads will bow down in shame and sadness for the storyteller goes on to say that the Camayurá became careless in their pride, for they neglected to guard the field. One night *capimá*, the deer, came and destroyed the field. Next morning there was nothing but trampled earth, not a stalk or a root or a leaf remained. When *Pakoin* and the fish saw what had happened they were very angry with the Camayurá and told them to kill the deer. The Camayurá killed the deer, and they still hate and kill deer but they do not eat its flesh. The Camayurá were very sad and walked over and over the field searching to see if anything was left. Eventually an old Camayurá found just one little piece of stalk in a far corner of the field. From this little piece the Camayurá planted a crop and it is from this field that all other fields have originated. But they will hasten to say that no field has ever grown so tall and beautiful as that first great field planted by *Pakoin* and his fish helpers.

Next morning when the visitor again observes the men at work in their fields, and watches the women busying themselves around their pots, graters, and sieves, and sees long rows of snow-white balls of manioc drying or stacked in baskets in the houses, he might well say to himself: truly manioc is the staff of life of these people.

The manioc which the Camayurá use is the bitter variety (*Manihot utilissima*) native to tropical South America. No plantings of sweet manioc were seen. The field is cleared with the ax (*yï*), and the branches of the trees are cut up for firewood and carried to the village or are left to dry near the edge of the field. The large trunks are then burned. No attempt is made to dig out the half-burned stumps. When the fires have died out, the field, *ko*, is ready for planting. Fields vary in size according to the needs of a family. The fields observed varied from ½ to 1 acre in extent, the shape being generally circular.

Manioc is planted in hills or mounds (*manitúm*). While one man is cutting last year's manioc stems into pieces about 10 inches long, another is hoeing up a round hill about 3 feet in diameter. When the hill is completed, the man with cuttings pushes 9 or 10 pieces into one side of the mound, leaving about 4 inches showing above ground. The cuttings are placed close together and are covered by hand. This process continues until the field is planted. The mounds are about 5 or 6 feet apart, and as the cuttings are placed on an angle on the same side of each mound, the whole field gives one the impression of a cornfield after a strong wind. Although the Camayurá give no reason, the slant of the cuttings is in a westerly direction. However, once the manioc plants begin to grow they assume an upright position.

Manioc, as has been mentioned, is a food crop of primary importance to the Camayurá. A crop failure, naturally, would result in a food shortage and consequent hardship to the people. Manioc fields, they are aware, are threatened by enemies. Insect pests, deer, and wild pigs can destroy a field. The plants sometimes do not grow well, possibly because of poor soil or drainage or some form of blight. To protect their fields against these evils the Camayurá resort to magic. The fortunes of men, animals, and plants, they believe, are controlled by spiritual beings called *mama'é*. All plants and animals that are of real concern to them have guardian spirits whose assistance can be solicited.

Manioc has three of these *mama'é*, called *ihít*, *ivirát*, and *ivét*. These spirits are not anthropomorphic, nor are they considered the souls or spirits of the plant itself. They appear to be, rather, guardians of the manioc plant. Although the Camayurá were at a loss to explain the appearance of these spirits, they were quite clear as to their symbolic representation. In the village of Tuatuarí there is a man by the name of Turutsí who has three wooden posts, on each of which a *mama'é* is painted. The symbol for the *ihít* is a T about 12 inches long and 1 inch in diameter; the symbol for the *ivirát* is three vertical lines about 36 inches in length; and the symbol for the *ivét* is a half-moon about 6 inches long. What is singular about these symbolic drawings is that not only the names but the forms themselves resemble the three tools closely associated with the cultivation and preparation of manioc for food. The word *ihít* is used for the hoe and the symbol bears some resemblance to it; the word *ivirát* is used for the digging stick which is used in digging up the roots at harvest time—the three lines look like three digging sticks; the *ivét* is the *menyú* turner, a flat half-moon-shaped piece of wood which all women use for turning over the flat cakes of manioc meal when they are baking on the cooking plate over the fire.

It would be a mistake, however, to consider the hoe, the digging stick, and the *menyú* turner as religious symbols. Only the sacred posts on which these objects are painted represent the *mama'é*. The Camayurá have only these three posts, which are the property of the whole tribe although kept in the house of Turutsí.

After a field has been planted, the owner of the field, usually the head of an extended family, makes an offering to the three *mama'é* of manioc by placing a gourd bowl of *mohét* (mashed sweet-potatoes boiled in water) before each of the three posts. This is believed to assure the good will of the spirits and the protection of the field. If the manioc plants do not grow well, "the field is sick," as the Camayurá say; they will then take the three posts out to the field during the night and the owner and his friends, usually shamans, will smoke tobacco around the posts calling on the *mama'é* to cure the field.

The Camayurá also believe that the field may become "sick" as the result of witchcraft practiced by some enemy, quite often an Indian of a neighboring tribe. The owner of the field will, in this case, call on his personal *mama'é* to reveal the cause, which is usually a small object which has been injected into the field by the sorcerer. The *mama'é* will show the man where the evil object is hidden so that he can remove it from his field.

The technical control over manioc production in the eyes of the Camayurá is in no way commensurate with food and the ritual value of manioc. Not only is manioc the basic year-round food supply but it is the food offered visitors during the ceremonial season which opens at the end of the rainy season. The anxieties arising out of the uncertainties accompanying manioc production are, at least in part, compensated for by an appeal to supernatural help. The anxiety is further emphasized by the origin myth of manioc.

After about 7 months, manioc is ready for use and the owner and his family go into the field to harvest the roots according to their needs. First the husband pulls out the stalk and then the women and children dig up the roots with digging sticks. The roots vary in size from 6 inches to as much as 3 feet, 18 inches being an average size. The large tubers are tied into a bundle and the smaller ones are placed in a rectangular basket, *iripari*, about 3 feet long by 2 feet wide and 6 inches high. The bundles and baskets are then carried back to the village on the heads of the members of the family. If manioc is to be prepared for a ceremony or for a voyage, large quantities are dug up. It is customary, however, to leave the manioc in the ground until required. If deer or wild pigs threaten the field most of the tubers will be taken from the ground and stored after drying.

PROCESSING

Whether the task of preparing manioc is performed in the central part of the house or in an adjoining shed depends upon the size of the house and the availability of space. A small overcrowded house does not allow enough room for the large pots, baskets, graters, and sieves necessary for the work. A roof over the heads of the workers, of course, is necessary to provide shade in the dry season and to shed rain in the wet season. Once the tubers are brought in they are deposited near the large flat pots which are the principal items in the round of processing activities.

As there are three different tasks in the general processing of manioc, it is customary for three women to work together. The first woman peels the tubers by scraping off the dark-brown skin with a shell knife or scraper, *itá*. Seated on the ground before a bundle or basket of tubers, she takes a tuber and holding it upright, with one end resting on the ground between her thighs, she scrapes downward until the tuber is clean and white. The peeled tuber she then places upright in a pot half-filled with water to keep the tuber moist.

The second woman, who performs the grating, is seated before a larger pot, roughly 2 feet in diameter, over which she places the grater, *ivehé*. The grater is a wooden board about 3 feet long and 9 inches wide at each end, narrowing toward the center to a width of about 6 inches. In the central part of the board, covering an area of about 18 inches long and 6 inches wide, are embedded the fine teeth for grating, which may be of shell, thorn, fish teeth, or spikes made from tucum palm thorns. It is customary for the woman to place the pot before an upright house or shed post so that one end of the grater is braced against it while the other end is held against her abdomen. She then takes a peeled tuber and, holding it upright in both hands, rubs it back and forth over the teeth until it is reduced to shreds. Periodically she dips the tuber into the water pot and sweeps the pulp from the grater into the pot below it with her hand. When the pot is full she adds cold water and stirs it so that the water and pulp are thoroughly mixed.

The third woman, who does the pressing, is seated before a still larger pot over which are placed 3 narrow strips of bamboo on which is spread the sieve, *tuaví*. The sieve which is about 24 inches long and 16 inches wide is made from thin strips (one-eighth inch in diameter) of burití palm leaf fiber woven together with cotton twine at intervals of 2 to 3 inches. The sieve thus looks like a reed mat; it can be rolled up or folded laterally but not longitudinally. The interstices are close enough not to permit bits of pulp from falling through but far enough apart to allow the juice and fine sediment to fall into the pot below.

The pot over which the processing is done is near enough to the grating pot so that the woman performing the pressing can reach it while seated. With the gourd dipper she takes out a quart or so of the wet mass and places it on the sieve. She spreads it evenly along the surface and then folds one side of the sieve over it. She then begins to squeeze the sieve with her hands, moving along the roll several times. She then rolls the sieve tighter and again squeezes along the roll. She continues until she can expel no more juice. After unrolling the sieve she takes the white moist mass and rolls it into a round ball, which is then placed on a round basket tray to dry. If the quantity is large, the balls may be placed on a platform. Some women, instead of rolling the pulp into a round ball, separate the long sausage-like roll of pulp into four parts and press the pieces together to form a segmented block showing the pattern of the sieve on the outside.

After several days in the sun and wind the balls are dry and ready to be ground into meal for making the flat pancakelike *menyú*. The pulp, either moist or in the form of dry balls, is known as *tiburatḯ* and is the basic storable and transportable manioc product. While drying, a red fungoid growth sometimes appears on the balls but is not considered harmful. Large quantities of dried balls are stored in carrying baskets (*pirapuitq*), covered with leaves, and stacked near a wall in the house.

Another way of expelling the poisonous acid is by simply drying the tubers. The tubers are first peeled, but instead of being grated and pressed are dried near a fire. When thoroughly dried they can be stored in baskets or can be ground directly into meal in a mortar. By preparing manioc tubers in this way, of course, the byproducts of juice and starch are not obtained. Dried tubers are known simply as *temių*, the Camayurá word for manioc.

The third basic product of manioc processing is starch flour, *tibuák*. The juice which has been expelled from the grated pulp is a whitish liquid which contains manioc starch in suspension. When permitted to stand, the starch settles on the bottom of the pot, and after the water is carefully poured off, the starch can be dried. When thoroughly dried the fine starch flour is ready for use. This flour is not made in large quantities and is usually kept in a small gourd vessel. The juice is generally boiled for hours in a huge pot or cauldron to remove the acids. This boiled juice (*mohét*) can then be drunk, or boiled still further to form a thick starch pudding, or boiled with fish or sweetpotatoes.

In review, one might say that there are four basic manioc products from which food can be prepared: (1) the dried pulp, either in the form of balls or ground meal, *tiburatí;* (2) the dried tubers, *temių;* (3) starch flour, *tibuák;* and (4) the juice containing the starch, *mohét*. The manner in which food is prepared from these products will be discussed later.

SWEETPOTATOES (YETÍK)

If manioc is the bread of the Camayurá, then the sweetpotato is their vegetable. At any hour of the day women and children can be seen roasting the tubers in hot ashes or eating them while occupied with household duties or at play. As a token of friendship a boy or girl will run up to one, break a hot sweetpotato in two and offer a steaming half.

The sweetpotato (*Ipomea batatas*) grown by the Camayurá appears to be the white variety that is found in the markets of Brazilian towns. The tubers seen were rather small, averaging about 4 inches in length. The slips are planted (set out), just before the rains, among the manioc plants, usually in the part of the field nearest to the village. Small patches of sweetpotatoes were also observed growing near the houses on land that had been fallow for a long time. After 5 to 8 months the tubers are large enough to eat, and the women and children go to the fields to dig up what they need for the day, carrying them to the house in large flat baskets.

Although an important food article, the sweetpotato does not play the same role in the life of the people as manioc. As far as could be ascertained, the sweetpotato does not have a place in mythology nor does it have special guardian spirits to whom offerings have to be made. If sweetpotatoes do not grow well, the owner may decide that an enemy has injected some evil object into the field and he will smoke over it and eventually remove the injurious object. This act, however, is a general magical act of curing and not special to sweetpotato cultivation as such.

MAIZE (HAWATSÍ)

Maize, although grown by the Camayurá, does not appear to be as important a food item as manioc and sweetpotatoes. Whether this fact is due to custom or climatic conditions is not clear. Among the Bacairí to the south, maize is of great importance as a food and plays a role in myth and ceremonial.

The maize (*Zea mays*) grown by the Camayurá has a long slender ear (12 inches), the yellow and brick-colored kernels lie in regular rows along the ear and average about three-eighths of an inch in width. The dried kernels appear much softer than those of the maize grown by the Brazilians.

Maize is planted at the beginning of the rains. The planter walks among the manioc plants, making holes in the ground with a pointed stick, and is followed by another who drops three seeds into the hole and covers the seeds with his foot. In March the maize is ready to pick. Some of the ears are dried and hung on the beams of the house for next year's seed. During the months of June, July, and August of 1948, except for the dried ears of seed maize, no maize was observed among the Camayurá either stored or in the form of food. No beans or squashes were observed.

FRUITS

In addition to garden products the Camayurá produce two fruits—the "piqui" and the "mangaba." These fruits can be said to be cultivated insofar as the people plant the seeds from which they grow. No pruning or other care of the trees was observed. Brazilian naturalists claim that these trees have been brought to this region from the plateau, for they are seen only around the villages or growing in abandoned village sites.

The piqui tree, when mature, grows to a height of about 50 feet. The gnarled trunk and twisted branches give the tree a very rugged appearance. The leaves are large, dark green in color, and provide excellent shade near or in the village. The tree is planted from seed and requires about 10 to 15 years to reach fruit-bearing stage. The spraylike blossoms are pale yellow. The fruit is about the size and color of the avocado but is rounder and usually shows two segments which contain the two large stones or seeds.

The mangabeira (Portuguese for mangaba tree) which produces the fruit called mangaba, is much smaller, growing to about 15 feet or the size of an average plum tree. These trees, too, have been imported from the plateau. The mangabeira is a latex tree, the natives sometimes using the latex to make rubber balls. A cut on the bark or fruit at once permits the white milky liquid to exude to the surface. The tree, although gnarled as are most of the trees belonging to the semiarid plateau, has small leaves and a beautiful snow-white star-shaped flower. The fruits which appear to grow all the year round, are the size and color of a small apricot, being, like the apricot also, somewhat downy on the surface. The interior consists of a soft whitish pulp containing many small seeds and a refreshing cherrylike flavor. Both trees are found in considerable profusion around all the settlements that have remained located in one spot for a number of years.

The Camayurá attribute great value to the piqui, or *peke'i* as they call it. Piqui time is a good time, everybody feels good, there is dancing, the sacred flutes are played, and offerings are made to the *mama'é* of the piqui tree. This attitude is undoubtedly associated with the nutritional value of piqui and its position in the annual consumption cycle. The piqui is known to have a heavy oil content and, although I have seen no chemical analysis of this fruit, its resemblance to the avocado should indicate, in addition, a rich mineral and vitamin content.

Extremely important, too, is the fact that piqui becomes available in December, being the first of the new year's food products. The tropical, warm-water fish are not particularly rich in oil, and manioc, as we know, is predominantly a starch food. Piqui, therefore, comes in during a dietary low in terms of fresh vegetable foods.

When the piqui fruits ripen they fall to the ground and are gathered up for processing. Around the village the gathering is done by women and children, but when the fruits have to be brought in from some distance men load them in wicker burden baskets and carry them to the village on their backs.

The following account of the methods of processing is based not on observation, but upon the statements of the Camayurá. When the fruits are brought in they are unloaded in the central part of the house where, as we have seen, manioc is processed. Many of the same implements are used. The women split the fruit with a shell knife, remove the skin, and place the pulp in a large pot. A little water is added and the whole mass, still containing the seeds, is boiled until the pulp separates from the seeds. The oil, *imí*, which arises to the surface is skimmed off and stored in narrow-necked gourd containers. When the pulp cools the seeds are removed and left to dry. The pulp is then pressed in the sieve, *tuaví*, after which it is ready to eat. If large quantities are prepared the pulp is wrapped in leaves, placed in baskets, and put under water where it will keep for months. If kept under water for a long time the pulp becomes sour but is still considered edible. The piqui nuts are opened and the kernels are eaten, roasted or unroasted.

Like the manioc plant, the piqui tree is surrounded by ritual, and, like the manioc, has three guardian spirits, or *mama'é*. Perhaps the most important is *mavurawá*, for a ceremony is performed for it during the piqui harvest. *Mavurawá* is represented by an insect with long antennae. *Kinemeú* also has the form of an insect but differs from *mavurawá* in having short antennae. Besides these two insectlike *mama'é*, the piqui tree has the bull-roarer, *urivurí*. The bull-roarer has an interesting legend. *Yanamá*, one of the first Camayurá created by Mavutsiné, obtained the bull-roarer from *aikq*, the mythical dogfish, in exchange for red toucan feathers. Later, *yanamá* gave the bull-roarer to the piqui tree in return for the knowledge of making piqui oil. The bull-roarer is shaped like a fish and is painted with red, white, and black bands.

These *mama'e* are intimately connected with the growth of piqui. If a tree bears badly the old men gather around it, smoke tobacco, and ask the *mama'e* to cure the tree and make it bear well. At the beginning of the piqui harvest, the Camayurá perform the *mavurawá* ceremony. The men and women paint themselves with urucú and genipapo and sing and dance in praise of the piqui tree. At one stage in the ceremony, processed piqui is eaten and *mavurawá* is said to come down from the tree and eat piqui with the people. *Kinemeú* and *urivurí* are also said to be present at the ceremony. When darkness falls the sacred flutes, *jakui*, are played and piqui is offered to them. Every effort is made to keep a small quantity of last season's piqui so that some of it can be offered to the flutes.

COTTON (AMANAYŨ)

In addition to the food crops just described, the Camayurá cultivate such plants as cotton, urucú, and tobacco. The native cotton which the Camayurá cultivate is a perennial, growing to a height of from 5 to 7 feet. Everything connected with cotton, from planting to processing, is women's work. Women plant cotton near the houses at the beginning of the rainy season, placing the seeds about 2 meters apart. The next May the bolls are ready to pick. Cotton is, however, picked only when required. Even as late as August women were seen picking cotton into small circular baskets. No mention was made of an origin myth or of guardian spirits associated with cotton.

URUCŨ[1]

Urucú is usually planted near the village on lands that have formerly been used for garden crops. This plant, which on the dry plateaus is a low bush, grows in the moister bottom lands to a height of 20 feet or more. The prickly, heart-shaped pods turn to a rich brown color when ripe, the interior being filled with red seeds. The seeds are removed from the pod and boiled in a pot until the hulls separate from the kernels. The fine soft kernels are then boiled until a thick red paste is formed. The paste is kneaded into a cake about 4 inches in diameter and allowed to dry. When required for use, a piece of the cake is broken off and mixed with water or piqui oil and applied to the skin or to objects which the people wish to paint. When mixed with water the painted surface is a dull red but when mixed with oil the surface is bright red. Boiled urucú seeds can also be mixed with food and eaten. Although urucú is used on all ceremonial occasions, it is also used almost daily by the young people for purely decorative purposes. Urucú has a special *mama'é* but the Camayurá offered no stories connected with its mythical origin.

TOBACCO (PETÍM)

One does not have to be among the Camayurá long to realize that tobacco plays a special role in their lives. Following the universal custom of offering tobacco in the form of cigarettes or Brazilian twist in order to enhance social interaction, we observed that only the old men would light up. The young men and women would take tobacco but would later pass it on to their fathers, uncles, or husbands. It was later learned that although shamans could smoke tobacco for pleasure, its primary use was in shamanistic rituals.

Manioc and piqui, for instance, have guardian spirits or *mama'é* which are represented by symbols. Tobacco, on the other hand, is itself the living representative of the *mama'é*. Tobacco is called *petím*, and *petím* is also the *mama'é*. Although no exhaustive analysis of native ideas about tobacco and attitudes toward it could be made, owing to linguistic difficulties, the general notions concerning it appear to be as follows: (1) Tobacco when smoked has the power to bring the shaman into contact with the *mama'é* of men, animals, and plants; (2) tobacco has the power to inject harmful objects into the bodies of one's enemies or into gardens or objects such as canoes, bows, and arrows.

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[1] The same word is used in Camayurá.

Tobacco, the Camayurá say, is the gift of *pituhá*, who taught the people how to cultivate tobacco and to use it in shamanistic rites. *Pituhá* is the "bemteví" (*Pitangus sulphuratus maximiliani*), a yellow-breasted bird about the size of a robin. This saucy bird with its cheery song is quite common in Brazil and is important in the mythology of the Terena. *Pituhá* is today a shaman, and the Camayurá claim that he can bring illness and misfortune to people.

The cultivation and use of tobacco is restricted to men. At the beginning of the rains men plant tobacco seeds around the edges of their manioc fields. After about 4 months the leaves are gathered and hung from a cleft stick to dry. Later the tobacco is cut into narrow strips, lightly rolled, and stored in small baskets. For making cigarettes the Camayurá use leaves from several varieties of trees. The central part of the leaf is first removed and the strips of leaf are rolled around the tobacco, new pieces of leaf being added until a cigarette about 10 inches long is formed. The end of the cigarette is tied with a piece of burití fiber. The cigarettes are pleasant to smoke, the leaf giving the tobacco a strange flavor.

FISHING (PIRAREHÉ)

Fishing is a lifetime occupation among the Camayurá as among the other Upper Xingú tribes. As soon as a boy is able to handle a small bow and arrow he will accompany the men and stand on the bank of a stream, waiting his chance to shoot a small fish. Fishing continues to be his main task until age weakens his muscles and impairs his vision. Even old men, whose eyesight no longer enables them to shoot accurately, will use conical basketry traps in the shallow waters or just stand around giving advice to the others. Not a day passes without someone being out fishing, and as the fisherman enters the village with his fish strung on a vine or stick, a shout will go up from those who see him, announcing that fish is to be shared, cooked, and eaten.

It follows from this that fish is the principal protein food of a Camayurá. He can get along for a day or two without his *menyú*, but to pass a day without fish is to have nothing to eat. Fishing is surrounded by beliefs and avoidances. A menstruating woman cannot eat, cook, or even touch a fish. For greatest success in fishing, a man should avoid sexual intercourse during the night before an important fishing expedition. He asks his personal *mama'é* to assist him in fishing. Some of the large scaleless fish represent mythical beings, like the *aiką* and the *uahiú*, who planted the original manioc field. An expectant mother and her husband must avoid eating scaleless fish. Although individuals sometimes fish alone, one generally sees groups of two or three in canoes, some paddling, others standing ready with their bow and arrows to shoot promptly whenever a fish appears within range. Large fishing trips are arranged by the chief in which all able-bodied men and boys take part.

The Kuluene and Upper Xingú proper are plentifully stocked with many varieties of fish. In one catch of some 80 fish, 20 species were counted. In my experience these waters were the richest ever seen. Fishing in the main streams with hook and line for 1 minute was usually sufficient to catch a fish or to lose the bait from the hook. The larger fish appear to inhabit the deeper waters of the main streams where the muddy water makes them relatively safe from the arrows of the Indians. The favorite fishing grounds of the Camayurá are the headwaters of the smaller tributaries where the clear water makes shooting easier and where dams can be built. Small lakes or sloughs are also used, especially after the flood period, which leaves large quantities of fish trapped in these basins.

No effort was made to obtain a complete list of the species of fish used by the Camayurá. Only the commoner kinds can be mentioned. Perhaps the most common fish is one which the Brazilians call the "piranha." There appear to be two varieties in this region: one is the notorious "piranha" that is said to attack bathers, and the other is not dangerous to man. The dangerous one is the smaller, averaging about 2 pounds, being silvery bright and rather perchlike in shape. The larger variety is similar in appearance, but does not have the razor-sharp teeth of his dangerous companion. Both are edible and both are called *pirará* by the Camayurá. Another fish which has a somewhat similar name is the *pirarará.* The reason for this similarity in names is not clear, for the *pirarará* is a large smooth-skinned bottom fish ranging up to 50 pounds in weight. When hauled into a boat this fish emits audible grunting noises. Its flesh is coarse and much inferior in taste to the others. Another basslike fish ranging from 4 to 5 pounds is the *uchurí*, or "cachorro" in Portuguese. It is called "cachorro," or dog, because of its long curved teeth. It is also edible but of inferior quality.

The three fish most highly prized as food by the Indians and the Brazilians are the *mandubé*, "fidalgo"; the *tucunaré*, "tucunaré"; and the *matrinchá*, "matrinchã". The "fidalgo" is a catfish with black stripes running from the dorsal to the ventral side. The "tucunaré," ranging from 4 to 6 pounds, is a scaly silvery white fish somewhat basslike in shape. Perhaps the finest table fish is the "matrinchã," which is not only salmonlike in appearance but the pinkish flesh tastes like the salmon of the Pacific coast of North America.

In the shallow headwaters of the tributaries there are innumerable small fish, some no doubt the young of the larger species, which the Camayurá collectively call *yanaboró.* They range from a few inches to a foot in length. In these shallow waters is also found the *wiraké*, or electric eel, which preys on these smaller fish. The shocking power of this fish is very real. And not to be forgotten is the *tracayá*, or terrapin, which is plentiful in these waters, the flesh and eggs of which provide the Indians with a considerable supply of food. The flesh of the cayman is not used by the Camayurá.

The material equipment employed in fishing consists of canoes, bows and arrows, dams, weirs, basketry traps, and timbó. Shooting with arrows is by far the commonest method of fishing. As a man never moves far from the village without his bow and arrow, he is always ready to shoot a fish in some nearby stream. Even when timbó is used, shooting is resorted to so as to dispatch the fish. Of course, once the fish have died from the effects of timbó they can be picked up by hand. The weirs used by the Camayurá are cylinders about 4 feet long and 2 feet in diameter made from light cane, the longitudinal cane rods being held together by withe lacing placed about 6 inches apart. The closed end is conical, and the broad end has an opening 6 inches in diameter, permitting the fish to enter. These weirs are placed at intervals into brushwood dams, with the opening facing upstream. The dams themselves are made of brushwood and are usually pinned down by crossed stakes. In deeper streams the brushwood is held in place by upright stakes and is weighted down by heavy stones. During low water the dams are permanent for several months, a gap being left open to allow the fish to enter when not in use.

Dam fishing is employed with or without timbó. Some morning when the men observe a large number of fish above the dam they run two or three canoes through the gap and close it. The men in the canoes then go upstream and drive the fish down toward the dam, near which a number of men are stationed with bows and arrows to shoot the fish as they try to escape.

When timbó is used, an additional dam is built upstream so that the fish are completely enclosed. Weirs are placed in both dams and after the timbó is mixed with the water the fish can be easily shot as they come to the surface for air. The following day all the fish are dead and can be collected from the surface near the lower dam. This has to be done early before the kites and gulls carry off the fish.

The conical hand trap which is used among the weeds in shallow water is about 2 feet high, 18 inches wide at the bottom, narrowing to about 6 inches at the top. A man will wade along in the shallow water placing the trap down as he goes. When he feels a fish in the trap he puts his hand down through the hole in the top and throws the fish onto the bank. This is a blind way of fishing and only small fish that hide among the weeds are caught in this manner. The hand trap is made from the same materials as the weir and can be employed with or without the use of timbó.

For poisoning fish the Camayurá use several kinds of lianas or vines which the Brazilians collectively call timbó. A Brazilian naturalist of the Museu Nacional of Rio de Janeiro informed me that these vines contain rotenone, which when mixed with water has a paralyzing effect on the breathing organs of fish. In order to release the poison, the bark and stems of the vines have to be crushed and the sap allowed to mix with the water. To be most effective, timbó should be applied in still water; from 3 to 12 hours is required to kill the fish. The time, of course, varies with the volume of timbó applied. Fish that are temporarily stupefied will revive if allowed to drift into pure water.

The Camayurá also use the fresh-water terrapin and the diamondback marsh turtle for food. Of the two the terrapin is by far the more important. Young men catch terrapin by swimming. They slowly swim near the terrapin while it is on the surface, and as it dives the swimmer follows it under water and captures it. The terrapin can be prepared for food in two ways; by cutting out the fleshy parts and boiling them, or by placing the terrapin, back downward, on live coals and roasting it. During the months of August and September, when the rivers are at their lowest and the sand bars are exposed, the terrapins crawl over the sand and deposit their eggs in holes in the sand. A terrapin may lay as many as 12 eggs in a nest, the eggs being pure white in color, ovoid in shape, and about 1½ inches in length. The interior is almost entirely taken up by a yellow yolk, which when boiled or roasted is very tasty, although much coarser grained than the yolk of a hen's egg. The eggs are evidently rich in oil and protein, for the Indians gain weight and strength at this time of the year.

During the egg-laying months the Camayurá go out at dawn, and as they paddle near the sand bars they see terrapin trails leading from the water to the nest. They follow these trails, and a great shout goes up when they uncover a nest of eggs laid during the night. Sometimes they are disappointed, for otters, foxes, gulls, and kites also like terrapin eggs and may have preceded them. At this time of the year small groups of Camayurá and Trumai spend several weeks away from the village, living on terrapin eggs and camping along the banks of the rivers. It is during this period, too, that their enemies, the Shukaramâi and Juruna are also wandering, and a careful watch has to be maintained by the Camayurá so that they will not be surprised and massacred during the night. The diamondback turtles are less numerous, but when one is found it is taken to the village and kept tied to a house post until the owner wishes to roast it.

In order to give a more intimate picture of a fishing expedition, I shall describe a fishing trip in which I participated—chiefly with a movie camera.

Early one morning while it was still dark, Tamapú, the chief, could be heard walking up and down in the plaza in the village, giving instructions to his people. Asking a member of the Roncador-Xingú Expedition, whose hammock was next to mine and who had some knowledge of Tupí, what it was all about, he informed me that Tamapú was telling the men to make preparations for a fishing expedition. He detailed certain men to go and prepare the dams, others to go and cut timbó, and others to repair their weirs and hand traps. About 8 o'clock in the morning the young men went off to their tasks; all that day we were able to watch the men repairing weirs and putting points to their fishing arrows. Tamapú, himself, made a new conical hand trap in order to show the details of its manufacture.

Late in the afternoon the men who had gone out to cut timbó returned carrying neatly tied bundles over their shoulders. Some of the young men carried two bundles, one for their father or brother, who had remained in the village to repair weirs or had gone to prepare the dams. The bundles were about 18 inches in diameter, strongly tied with sipó vine, and were made up of sticks about a yard in length ranging from ¼ of an inch to 2 inches in diameter. These sticks, of course, were lengths cut from the long timbó vines which hang from the trees in the forest. At sunset the men who had built the dams returned and everything was ready for the next day's fishing trip.

The next morning all the able-bodied men, boys, and little girls set off to the stream where the fishing was to take place, carrying manioc cakes, burning brands with which to start fires, tobacco, hand traps, and bows and arrows. When we arrived at the stream an hour later, some of the young men who had preceded us were just completing the task of placing the weirs in the dams. The area enclosed by the dams was a wide part in a shallow stream about 150 yards in length and 100 yards at its greatest width. As there was a small island in the lower part, two dams had to be built while a single short dam enclosed the upper end. As this was the season of low water there was very little flow in the stream. The enclosed area was about 12 feet deep in the center, but at the dams the water was no more than 3 or 4 feet in depth. The dams were made entirely of freshly cut brushwood pinned down at intervals of 10 feet by crossed stakes. Four canoes were inside the enclosure.

Tamapú now gave instructions to the timbó beaters. Each man cut two long stakes and waded waist deep into the stream. With a wooden club he drove the stakes into the stream bed so that they formed a cross. The two stakes were then firmly lashed together. Into the crotch formed by the two stakes which was just above the surface of the water, the timbó bundles were placed. Altogether seven of these beating places were made—three on one side of the enclosure and four on the other. The men then cut heavy sticks about 4 feet in length and began beating the bundles.

The beating continued for about 2 hours or until all the bundles had been reduced to shreds. A beater would hammer away at a bundle, then turn it over and continue. Once the bark was loosened and the sticks began to break up he would grasp the bundle in his hands and douse it up and down in the stream so that the sap would mix with the water. After dousing the bundle he would sometimes jump up and down in the water, threshing it with his arms to make the poison spread more rapidly.

While the beaters were thus occupied, the older men, Tamapú among them, went up and down along the shallow weed-filled margins of the stream with their conical basketry hand traps, pushing them down as they waded along. Every now and then one could be seen thrusting his hand down through the opening at the top and throwing a fish onto the shore. Every fish down to 2 inches in length was accepted. Boys and girls along the banks collected the fish for their fathers and brothers.

Toward the end of the timbó beating a great shout went up and the Indians pointed toward the center of the stream, where a number of fish were seen breaking the water. The poisonous juice was beginning to take effect. After this first showing, fish all over the pond could be seen periodically jumping or swimming lazily along the surface evidently gasping for air. It was at this point that the bowmen got busy in their canoes along the dams and on the shore, shooting at fish that came to the surface.

After the shooting began, Tamapú and the men too old to shoot, sat on the shore giving instructions and advice to the bowmen. There was much shouting, laughter, and banter. Good strikes were applauded and misses were booed in a good-humored way. It was amusing to watch a bowman in the bow of a canoe following the wake of a fish with arrow fixed and bowstring taut, giving directions to the paddler behind him. As the fish were small, the archer had to be no more than 15 feet from the fish before he loosed his arrow. The men and boys on the dams did better. As the fish approached in their effort to escape, the archers would stand like statues with taut bows, and when the fish came within range they were shot sometimes at a depth of 3 feet.

Tamapú kept watching the men in the canoes and was evidently dissatisfied with their performance. Eventually he called out that they were missing too many fish because they had had sexual intercourse the night before and that they had better let the boys do the shooting. This obviously was not meant as a joke, for the men obeyed and were replaced by boys. It was true that the boys did better. Hour by hour more fish came to the surface and lay still. At first they struggled to escape when someone tried to pick them up by hand, but toward evening many drifted against the lower dam quite stupefied. Just before sunset the fish were gathered, strung on sticks or vines, and, suspended from poles, were carried back to the village. Early the next morning, men returned to collect the dead fish, clear the weirs, and open the dams so that the fish could again move freely in the stream.

The next day we were able to observe how the fish were cured. First the chief saw to it that every house group had its fair share of the several hundred fish caught. Following this the men made platforms about 3 feet high covered with sticks. The women cleaned the fish and placed them on the platforms. Many of the smaller fish were not cleaned but were thrown on the platform in the round. Small fires were then lighted under the fish so that the heat and smoke would cure them slowly. The length of the platform, of course, depended on the size of the catch. The platforms which are about 1 yard in width may attain 20 feet or more in length. The fish were left on the platforms for 4 or 5 days. However, the people began to eat them during the first day. During the rainy season the fish are sometimes cured in the houses and are wrapped in leaves and stored in large wickerwork baskets. But during the dry season the fish remain on the platforms until eaten. As there were only two small dogs in the village, the problem of protecting the fish was not serious.

HUNTING

Hunting plays a very minor role in the economy of the Camayurá. Such large game animals as the deer, tapir, and peccary are not hunted for food. They may be killed if they disturb the manioc and sweetpotato fields, but even then their flesh is not eaten. The jaguar and ocelot are hunted for their skins, bones, teeth, and claws. About the only animals that are hunted for their flesh are the monkeys and the paca, and only the old men are permitted to eat their flesh. During the 3 months I was among the Camayurá I heard of no hunting trips nor did I see the people eating flesh food. However, a certain number of monkeys and ocelots must be hunted, as their bones are used for making arrowheads. Jaguar hunters are specialists. They use arrows that are tipped with large bamboo points and paint themselves black as if going on a war party.

Birds, on the other hand, are of greater economic importance. The Camayurá occasionally hunt the various varieties of mutúm, jacobí, and the makúku and pikaú. There appear to be several kinds of forest fowl which the Brazilians call mutúm (Cracidae family). There is a large black variety about the size of a turkey, the male of which has red wattles and a red bony crest. A smaller and more common variety has white wattles and a crest of feathers. The black jacobí, about the size of a hen, is quite plentiful in the forests. The flesh of these mutúm is dark but tasty. They feed on the berries of certain tall forest trees and are difficult to shoot because of their shyness and the range at which they have to be shot. Perhaps the best game bird is the makúku—a gray, white-fleshed partridge about the size of a small hen. The pikaú is a brown bird and looks like a large pigeon. Besides these larger birds there are numerous varieties of quail. As mutúm hunting requires great skill with the bow, only a few men specialize in it. The Trumai, who eat mutúm, are said to be the best bird hunters in the area. Birds are hunted early in the morning and at sunset and the hunters are just as anxious to get the feathers as the flesh. Although there are ducks in the rivers and lakes, they are not hunted for food by the Camayurá. The feathers of the hawks, the vultures, and the eagles are especially prized for feathering arrows. The feathers of the blue, red, and yellow macaws, the toucan, the parrot, the recongo, and various-colored weaver birds are used for making feather ornaments. Smaller birds which can be approached are shot with the blunted whistling arrows. Whether the Camayurá use traps to capture birds was not ascertained.

In addition to hunting birds for their feathers, the Camayurá keep great numbers of live birds in the village for this purpose. Among the most common are parrots, macaws, and weaver birds. When a man wishes a few feathers he pulls them from the bird's wings, tail, or tail coverts. Besides these feather-producing birds, the Camayurá keep parakeets and other small birds as pets. All these birds are caught young. Boys, particularly, watch for nests and when the birds are a few days old they bring them to the village. Sometimes as many as 70 parakeets are to be seen in a house. The young featherless parrots and parakeets are transported in special baskets woven from green grass and are kept in these baskets near the fire at night. During the day they are kept in shallow pits in the floor of the house to prevent them from running away.

The Camayurá are very kind to their birds. Knowing what food they require they spend much time collecting the grubs and fruits which the birds need. In the mornings it was an amusing sight to watch the girls and boys feeding the young parrots and parakeets. They would chew boiled sweetpotato or *menyú* and feed the young birds directly from their mouths. When the birds become a little larger they eat off the ground and sit around the fire in the morning just like the people. One cold morning I moved a number of young parrots away from the fire fearing they would burn themselves. But the parrots remonstrated with loud chatters and soon lined up in their original position near the fire. Once the birds get into the habit of being fed they insist upon this service for the rest of their lives. Even a full-grown bird will fly in front of one, chatter to attract attention, and then flap its wings rapidly and open its mouth. While one is eating, they alight on one's shoulders, head, and on the edge of one's plate. To a white man they soon become pests. The parrots and weaver birds, particularly, take delight in carrying off pencils and paper, and even to taking cigarettes from the package in one's shirt pocket. One day a weaver bird was seen flying around the camp with an ampule of expensive penicillin in his bill. On another day the same weaver bird was observed systematically thrusting his bill between the pages of the Yale Outline of Cultural Materials just as if to see whether there was anything of interest inside.

Although the Indians are not particularly interested in hunting by themselves they were always willing to accompany the white men on their trips to the woods to shoot deer and birds for the table of the Expedition. On several nights a jaguar (*yawát*) was heard roaring nearby and a few days later one was shot a few hundred yards from the camp. Small deer are quite plentiful and are so tame that they can be shot easily with the ill-kept Winchester forty-fours in common use in the interior of Brazil. While all game was cooked and eaten by the Expedition, the paca was found to be the most tender, jaguar and tapir being rather tough.

MANUFACTURE

THE BOW AND ARROW

A Camayurá and his bow and arrows are inseparable companions. With them he hunts, fishes, and goes to war. At night they are near his hammock, ever ready to be used in repelling a surprise raid. In hand-to-hand combat the bow is used as a thrusting weapon. An old Camayurá showed me a scar in his chest caused by the thrust of a Shukaramai bow. Furthermore, the bow is a mark of authority. When the chief gives his instructions to the people he walks up and down the village plaza with his bow in his hand. When a man is being bled he leans on his bow while a relative scarifies his body. The first toy a boy of 5 or 6 receives is a small bow and arrow. With this he plays, receiving larger and larger bows as his strength increases until he finally receives the full-size 7-foot bow of the adult man. In puberty seclusion one of the main tasks of a boy is to become a skilled arrowmaker.

The Camayurá are recognized by their neighbors as the expert bow makers of the Upper Xingú area. The typical Camayurá bow is rectangular in cross section, from 6 to 7 feet in length, and is made from the dark wood of the pau d'arco (*Tecoma violacea*). In addition to this type, the Camayurá make a smaller oval-shaped bow of a yellow-colored wood, also pau d'arco (*Tecoma conspicua*). This latter is of inferior quality and is made by the beginner or inexperienced worker. Although the best bows are made by the Camayurá and acquired by the other tribes through trade, there are only four expert bow makers at present among the Camayurá.

The rectangular bow, the Camayurá say, is a gift of Mavutsiné, the creator. After he had created the people, Mavutsiné made many inferior bows from yellow wood, a few good bows from dark wood, and two guns. These he laid on the ground and asked the people to choose. The hunting tribes, who are the enemies of the Camayurá, chose the inferior bow. The Camayurá then chose the good bows. Finally the *caraiba*, white man, chose the guns. Mavutsiné was sad because the Camayurá did not choose the guns. He became angry and ordered the white men to leave. He scattered them in all directions, for they were numerous. The white men are stronger because they chose the guns, but the Camayurá are the favorites of Mavutsiné because he told them to remain at Morená.

Although the origin myth describes the Camayurá as receiving the black, rectangular bow directly from the creator, they add that this bow is a Juruna type and that they originally made the light-colored ellipitical bow which is in common use in the Xingú area. As far as is known the Camayurá are the only ones who make the black bow in the Upper Xingú, although it is found among the other tribes, having been acquired through barter.

The wood for making the rectangular bow, *wirapát*, is known as *wiraputą*. For best results the wood should be cut in November and December. It is worked green and is kept in water during this period. The wood is first shaped with an ax and later with a knife and finally rubbed down and smoothed with a piece of sandstone. The length of the bow varies with the maker, but most of the bows seen ranged between 6 and 7 feet. In the middle these bows are 1 inch in width and three-quarters of an inch in thickness. The wood when new is brick-colored but gradually darkens until an old bow is almost black. Eventually an old bow loses its resilience and is discarded. The light-colored bow, which is elliptical in cross section, is shorter and is made by young men. It is weaker and does not last as long as the rectangular bow. Small bows for boys are also made from this wood.

The bow string is made from imbauba fibers spun into a strong cord about one-eighth of an inch in diameter. Both ends of the bow have a shoulder to hold the bow string in place, the extra cord being brought down to the middle of the bow and wrapped tightly around it.

The Camayurá make excellent arrows, averaging 5.5 feet in length, from uba cane or taquari (bamboo). The typical arrow, *ï'ïp*, has three principal parts: (1) the shaft, (2) the foreshaft, and (3) the head. In addition to these parts, the maker needs feathers, sipó vine, and cotton twine for lacing, beeswax and rosin to give the lacings firmness and to give the arrow bands of reddish-yellow coloring. In the arrow which the Camayurá prize most highly, the shaft is made of a piece of smooth faultless uba cane 53 inches long and one-half of an inch in diameter. Into one end of this hollow shaft he inserts a foreshaft so that about 6 inches remains inside of the shaft and about 12 inches is left protruding. The foreshaft is made from a branch of some hardwood and is wavy or sometimes almost corkscrewlike in shape. To hold the foreshaft in place and to prevent the cane from splitting, the joint is tightly bound with a narrow brown-colored strip of sipó vine bark. About 4 inches below the joint the cane shaft is given another 6 inches of lacing, both to reinforce the shaft and to give it beauty. Another narrow band of lacing is placed about 8 or 10 inches from the feather end of the shaft as well.

To the foreshaft the Camayurá fix a variety of arrowheads or points made from the stings of a stingray, monkey arm bones, or from the small ribs of the tapir and jaguar. The bones are whittled down until they are slender splints from 2 to 3 inches in length and slightly bow-shaped. This splint is then laid onto the flattened point of the foreshaft and tightly bound with waxed cotton twine, so that one end of the bone forms the point and the other a single barb. A heated piece of jatobá rosin is then applied just back of the binding and the arrow is turned so that a 2-inch band of yellow or red rosin adheres to the head, strengthening it against the softening effects of water. The Camayurá now like to use 3-inch wire nails or bits of heavy wire, for much less work is required to prepare points from these materials. For war and for hunting the jaguar and the tapir a bamboo point is used. In this case no foreshaft is required. The bamboo point is about 18 inches long with a lancelike point which is fitted into the cane shaft in the same manner as the foreshaft. The broad sharp-edged blade evidently inflicts a greater wound, thus giving increased killing power. The Camayurá also make a whistling arrow which is used for hunting birds and for games. It is the favorite arrow of the boys. A hollow tucum palm nut about 1¼ inches in diameter is fitted over the end of the cane shaft, being firmly held in place with beeswax. Two or three narrow slits are cut into the nut so that when it is shot it makes a sharp whistling sound. Sometimes the foreshaft is also put in so that the whistling nut fits into the joint made by the foreshaft and shaft. This arrow kills birds by stunning them.

The Camayurá, like the other Xingú tribes, have a characteristic way of feathering their arrows. The large feathers of the urubú, mutúm, or hawk are split and the two halves are fixed to the shaft at a 45° angle of torsion, the feathers varying from 8 to 10 inches in length. The ends are first bound to the shaft with sipó vine in the anterior part and cotton twine in the posterior part. The feathers are then sewn onto the shaft through small holes made into the cane at five or six different sections, each section having three transverse bindings. The end is decorated with a narrow band of red and yellow toucan feathers. In sewing the feathers onto the shaft the Camayurá use a fish tooth for a needle and "caitetú" (peccary) hair for thread.

It is doubtful whether the Camayurá have a general word for the arrow, each type of arrow being given a word defined by its use. The *ï'ip* is the arrow pointed with tapir bone and used for hunting monkeys and the small animals. The *iriparâ* is the whistling arrow which usually has three short feathers bound at the ends to the shaft. These feathers are not split, nor are they sewn to the shaft. The *iwapí* is the fishing arrow with bone points, but it has no feathering. The *mocoin-iwapí* or double-pointed arrow is also used for fishing. The arrows used by small boys are slender, sharpened reeds with a feather or two tied to one end. Larger boys use the whistling arrow. Although arrow shafts made from bamboo were seen, they were considered inferior by the Camayurá. In shooting the arrow the Camayurá hold the bow in a vertical position. The arrow is held against the bow with the index finger of the left hand while the end is held to the bowstring with the thumb and index finger of the right hand. The string is pulled back with the index, middle, and ring fingers. In shooting at distant objects the aim is elevated above the target. Up to 100 feet they shoot directly with great accuracy. In the mornings it was a common sight to see boys shooting small birds from the tops of trees about 30 to 50 feet tall with whistling arrows. One advantage of the whistling arrow is that it can be heard, and this may explain why it is used around the village by boys. Even if one is struck with one of these arrows it is not likely to cause a serious wound.

Besides the origin myth of the bow, only one other belief associated with the bow was heard. A man with an infant child was not supposed to make a bow, for if he worked at bow making it would cause the infant to have diarrhea.

THE CANOE

The Camayurá, like the other tribes of the Upper Xingú area, use the jatobá bark canoe (*igat*). It is an indispensable means of transportation, and is used for fishing, hunting, raiding, and visiting. Every family has at least one canoe. There are small fishing canoes used by two or three men and larger canoes which carry as many as eight people. In their travels from one village to another, family groups often spend weeks in their canoes, moving by day and camping on the banks of the rivers at night.

The Camayurá claimed that they know how to make dugouts and say that they were taught their manufacture and use by the Juruna. Although no dugouts were seen, the Camayurá stated that they use them on the lakes because they are more seaworthy than the shallow bark canoes. When traveling, everyone has his or her position in the canoe. The head of the party sits in the stern, the paddlers sit in the bow, while the women and children are seated in the center. A hearth made from sand is also located in the center, on which the women are able to prepare food. Children, as well as women, use a large calabash as a lavatory when on all-day journeys.

When a man wants to make a canoe he selects a large jatobá tree and asks a few expert wedgemen to help him. February is the best time for making bark canoes for during this month the bark is easy to remove and is not apt to crack. He then builds a scaffolding of poles lashed with heavy vines around the tree so that he can work up and down the trunk. First he cuts a semicircle with an ax above and below and then makes two vertical cuts from top to bottom. Wooden wedges are now inserted into the vertical cuts and men on each side begin to hammer the wedges in with wooden clubs in order to remove the bark evenly from the trunk. Great care is taken in wedging so that the bark will not crack. Once the bark is removed from the trunk it is carefully lowered to the ground. This completes the first day's work. The tree is, of course, left standing with one-half of the lower part of the trunk bare. In time the cut heals over and the tree continues to live and can be skinned again after several years. There appear to be plenty of jatobá trees in the forests, but if a man wishes to reserve a particularly fine tree he needs only to build a scaffolding around it and to inform the other men that he intends to make a canoe at such-and-such a place.

Next day the canoe builder returns to shape the bark trough. The bow is tapered to a point and the stern is thinned down ready for bending. The bow is always the narrower end of the shell. On the third day the man comes back with his assistants to perform the bending. Two heavy stakes are driven into the ground on both sides of the stern. A fire is then made inside the stern end of the trough on a layer of earth. After the heat has made the bark flexible, two strong poles are placed underneath the stern and the bark is forced upward to form a fantail stern. The two lateral stakes on the sides prevent the bark from bulging outward. The poles are lashed in place and left overnight. Fires are then built along the trough to make it curl inward and cross braces from gunwale to gunwale are placed at intervals to give the shell firmness. The bow is forced up slightly to keep it above the surface of the water when the canoe is in use.

The day following the bending, the canoe is placed upon a saddle made by crossing two pairs of stakes and is left to dry for several days. After it is dry the canoe maker returns and goes over the hull very carefully sealing up any cracks that may have appeared. The canoe is now ready for use and a number of men carry it to the river.

Camayurá paddles are from 4 to 5 feet in length, the blade being straight-sided and pointed at the bottom. The T-shaped handgrip is not a separate piece but is carved out of the handle. Sometimes the blade, instead of being flat, is carved in the form of an angular trough so that only one side is used for propulsion. No decorative designs were seen on paddles. Canoes are also propelled by poles, especially in shallow water. Every canoe has at least two paddles and two poles. When not in use, canoes, paddles, and poles are hidden in the bushes to keep them from being cracked or warped by the sun. Canoes are also turned upside down and left under water to prevent cracking. In addition to the paddles and poles, every canoe is equipped with a gourd bailer, for even if it does not leak water often comes over the low bow.

As has been mentioned, the bark canoe is an important part of Camayurá equipment. The Camayurá state that although a canoe can be easily and quickly made there is always a risk that the bark will split from end to end or that large cracks will appear in the hull. These dangers, they believe, are due to the ill-will of the *mama'é*, or guardian spirit, of the jatobá tree. In order to assure success they must keep the spirit away from the tree while the bark is being removed.

The *mama'é* of the jatobá tree is an insect called *turuwá*. This insect lives in the tree and watches over the welfare of the tree. When the canoe maker is ready to peel the bark off he smokes tobacco near the tree and asks *turuwá* for the bark. If *turuwá* flies away it is a sign of permission but if he remains in the tree it signifies that he is unwilling to have the bark removed. The canoe maker must continue smoking and talking to *turuwá* until he flies away. Only then can the bark be removed. If the bark should split in the process of peeling the canoe maker will accuse *turuwá* of bad faith and go to another tree and plead with its *mama'é*.

TWINE

An important item in Camayurá economy is twine. It is used in making hammocks, bowstrings, arrows, ornaments, in rolling cigarettes, and for many other uses in which tying is necessary. Although sipó vine is widely used for lashings in house making and for the preparation of large carrying baskets, the most important twines are made from cotton and burití fiber.

When a woman wishes to make cotton twine (*nimo'í*) she takes a little basket and goes to some of her tall cotton bushes and picks as many bolls of cotton as she thinks she needs or cares to prepare during the day. She then sits in the shade of the house with her basket of bolls, an extra basket for cotton seeds and her spindle. First she removes the seeds, then she plucks out the cotton until it forms a flat, thin disk about 8 inches in diameter. She continues this process until she has four disks of cotton, one on top of the other, resting on her thigh. The four disks she places over a smooth stick about 18 inches long and one-half inch in diameter. She then strikes one end of the stick against her knee until the cotton clings together around the stick in a long cylinder. The cylinder is removed from the stick and hung over it and waved in the air until it stretches into a fluffy soft cord about 2½ feet long and 2 inches in diameter. The woman then stretches out a length from the end of the cord and fastens it to the top of her spindle. She then sets the spindle in motion by rolling it on her thigh from knee toward her body. As the spindle turns and twists the cotton she keeps jerking the cotton to lengthen it and to keep it tight. After she has spun about a yard, she loosens the twine from the end of the spindle and fastens it just above the whorl and as the spindle is set in motion with her fingers the cotton twine is wound around it. This process is repeated until she has spun all her cotton. The twine is then removed from the spindle, rolled into a tight ball, and stored in the woman's workbasket.

The Camayurá spindle (*ï'ïm*) is a thin stick about 12 inches long to which a hardwood whorl (*muriti*) 2 inches in diameter is attached 2 inches from the bottom or thick end. The cotton twine is about the thickness of ordinary store string and also about as strong. Although all women spin, it is particularly the task of girls and old women. Late in the afternoons after the girls have painted themselves with urucú they sit in the shade at their spinning, often surrounded by young men similarly painted who engage them in conversation.

Burití twine (*muritcopawán*) is made from fibers obtained from the shoot or rod which forms the new growth of the burití palm. This rod contains the unformed leaves. The yellow leafy material is removed from the outer green covering by hand. The long leafy strips are then boiled to remove the starchy materials and rubbed by hand until only fine pale yellow fibers remain. These are tied in hanks and left to dry. In making twine, usually three strands of fibers are used although fine twine with two strands was also seen. The strands (*boritseawít*) are rolled on the thigh, each strand being rolled separately on the inward stroke but allowed to roll together on the downward stroke. The three-strand twine is the basis from which heavier twines, cords, and even light ropes are made. Burití twine is rolled into balls and kept until needed. Like spinning, this is always the task of women.

HAMMOCK WEAVING

The Camayurá have two types of hammocks—a solid cotton hammock and an open network hammock made from burití and cotton twine. The open network hammocks are the most common and are made by the Camayurá. Hammocks (*ení*) are finger-woven on a very simple loom (*inimoenóp*). Two posts are driven into the ground, either inside or outside of the house, around which the burití warp twine is passed. The posts are from 8 to 10 feet apart and about 3 feet high. The warp twine is the common three-strand size. The woof of cotton twine is woven across the warp at intervals of from 2 to 3 inches, leaving the warp threads about 2 inches apart. The cotton woof strings are three in number. The woman begins from the top working downward. She places the burití twine on one of the cotton strings and pulls it up between the other two strings which lie on top of the burití twine, and braids. This process is continued until she completes the cross woof. The material is then cut and the warp strands at each end are tied to form a loop to which burití fiber rope is attached for slinging the hammock. At first the hammocks are tan in color, but they soon become brown from the urucú which the people smear on their bodies. The weaving of solid cotton hammocks was not observed, and it may be that they are obtained from the Arawak-speaking Waurá or are made by Waurá women married into the tribe.

SEATS

The Camayurá make two types of seats, one for men and another for women. The man's seat or stool (*apiká*) is carved from a solid piece of wood, usually in the form of a bird or turtle. The stool, which is about a foot high, rests on two plank-like feet.

Instead of sitting on the ground while at work the women often use a seat made by tying together round smooth pieces of burití leafstalks about 2 inches in diameter and 18 inches in length. A hole is bored through each end of a stick and a strong cord is passed through all the sticks and knotted at each end. The seat can be rolled up and easily carried from place to place. Seats are used while the people work; when not at work, the Camayurá generally sit or lie in their hammocks.

MORTAR AND PESTLE

Another important article made from wood is the mortar (*inu'á*). The Camayurá mortar is made from a block of heavy hardwood roughly 2 feet in length and 18 inches in diameter. Instead of standing upright, as does the mortar used by the Brazilians, the Camayurá mortar lays in a horizontal position, the cavity being made in the upper side of the block. The pestle (*imirá*) is a heavy stick about 3 feet long and 3 inches in diameter, slightly narrowed in the middle. The mortar, although used principally for grinding dried manioc balls, is also used for grinding dried maize.

GOURD VESSELS

Gourd ladles which hold little more than a large tablespoon to those with a capacity of a quart serve a wide variety of purposes. They are used as spoons, cups, bailers, dishes, bedpans, containers for piqui oil, urucú, and beads, and ladles for stirring and pouring manioc juice. These vessels are made by cutting in two equal parts a pear-shaped gourd with an elongated protuberance which serves as a handle. Although most of the gourd vessels are ladle-shaped, a few waterpots were seen; these were made by cutting off the protuberance, leaving a narrow opening at the top. In cutting a dried gourd, a knife or other sharp object is used, the maker going repeatedly over the line of cleavage, later smoothing and rounding the edge with a piece of sandstone. Gourd vessels of the pot form are also used as containers for twine and tools used for making arrows and the ulurí for women; gourds of this type are usually suspended in a net from a rafter. For this purpose the Camayurá are now anxious to get tin cans or boxes with lids.

THE SIEVE

We have had occasion to discuss the sieve (*tuaví*) in connection with the preparation of manioc. It has, at least, one other important use, namely that of storing feathers. The long tail and wing feathers of the mutúm, eagle, and urubú that are used for feathering arrows are valuable and difficult to get. To prevent them from being bent, torn, and blown away, the owner places them lengthwise in a fold of the sieve and holds the sieve together by fastening together two pairs of sticks at each end of the sieve. Feathers for making ornaments are similarly stored.

The *tuaví* is made of buritÍ fiber and cotton twine very much in the manner of a hammock. The buritÍ fiber in this case, however, is obtained from the central spine of the leaf, long, heavy slivers being peeled off. Each sliver or rod is about 16 to 18 inches in length and about one-sixteenth inch in diameter, being uniform in thickness, straight, and springlike. These rods are then woven together with cotton twine in the same manner as the warp of the hammock, the interstices being about one-eighth inch apart. In appearance it looks like a small mat.

BASKETRY

In contrast to the Carib-speaking Calapalo and Cuicúru, basketry is not in great evidence among the Camayurá. Men are the basket makers and appear to specialize in the making of fish traps and weirs, which have already been described. The most common kind of basket, the *iriparí*, is a simple plaited basket which is made in many sizes. The small ones are square and the large ones oblong. The large ones are usually 3 feet long, 2 feet wide, and 6 to 8 inches high, and are used for carrying small manioc tubers, sweet-potatoes, and piqui fruit. The smaller ones, which the women use for picking cotton and as spinning and weaving workbaskets, are 8 to 12 inches square and about 4 inches in height. These baskets are made from narrow strips obtained from the cortex of the buritÍ palm leaf stalk. They are usually a solid brown in color but sometimes black strips are introduced, giving rectangular and triangular patterns.

The Camayurá also make a burden basket which can scarcely be called a basket from a technical point of view. This container, known as the *pirapuitán*, is about 3 feet in length, 18 inches in width, and 16 inches in depth. The frame is made with four oval hoops of wood, one for the back, two for the sides, and one for the bottom. These hoops are firmly laced together with sipó vine lacing and the spaces within the hoops are filled with large irregular meshes made with the same vine lacing. This container is used for transporting and storing dried fish, dried manioc tubers, and *menyú*. When loading a *pirapuitán*, leaves are first laid within the framework, the foodstuffs are then carefully stacked within and covered with more leaves. The open side and top are then laced over to keep the contents from falling out. This burden basket is carried on the back with shoulder straps and a tump line.

When carrying baskets or bundles on their heads the Camayurá use a small round pad made of grass called *abutéro*.

POTTERY

As far as could be determined, the Camayurá do not make pots but obtain them through barter from the Waurá. One woman was observed making a small pot, but she turned out to be a Waurá woman married to a Camayurá. Perhaps the Camayurá once made pottery like the other Tupí-speaking tribes and perhaps still have this knowledge, but all pottery in the Upper Xingú area now appears to be of Waurá manufacture. As the Waurá village was not visited, no special information was obtained about the manufacture of pottery.

The pottery observed among the Camayurá can be divided into two classes—the low flat-bottomed pots with bell-shaped sides and rim and the small zoomorphic pots used as dishes. No jugs, jars, or pitchers were seen. When one observes the Camayurá using their large pots for the processing of manioc, one cannot avoid the conclusion that the size and form of the pots are functionally related to the method of their use.

For processing of manioc and piqui and boiling the mixture of pulp and water, large shallow cauldrons with flat bottoms are ideal. For grating manioc, a wooden or bark vessel no doubt could be used, and a bark vessel for this purpose was observed among the Bacairí. But for boiling the pulp a pottery vessel is needed. The Camayurá use the same type of pot for all the various stages in the processing of manioc, as has been observed, usually reserving the largest for boiling juice.

These pots (*niahé*) range from 6 inches to 3 feet in diameter, and from 4 inches to 1 foot in height, the thickness ranging from ¼ to 1 inch, the everted rim being unusually heavy. The inside is black and the outside colored red, probably with hematite, sometimes decorated with vertical straight lines or zig-zag or wavy horizontal lines in black. The smaller pots are not usually decorated. The smaller pots of this kind are used for boiling fish, meat, or urucú seeds. The medium-size pots, besides for other purposes, are used for carrying water, a large gourd dipper being turned down in the water to keep it from spilling out as the pot is carried on the head of the bearer. The largest pots, as has been explained, are used for processing manioc and piqui. In using the pots over a fire, three stones or three small cracked pots are used as a rest.

The zoomorphic pots (*mawikaipí*) are made in a wide variety of sizes and forms, in red and black, ranging from 2 to 8 inches in diameter. They may be round, oval, or square and are generally quite shallow, the bottoms being flat or slightly rounded. Protruding from the rims of these vessels are the heads, tails, and feet representing birds, frogs, turtles, and alligators. The larger sizes are used for serving food and the smaller ones for mixing urucú powder with piqui oil. The smallest vessels appear to be used as toys by children.

Another important form of pottery is the flat plate (*niahé*) used for baking *menyú*. These disks with slightly raised rims range from 10 to 18 inches in diameter, 12 inches being the commonest size. These, too, are made by Waurá women, but the bottoms of worn-out old pots are often used for this purpose. Like the large pots, they rest on a tripod of three stones or small cracked pots.

COMBS

The Camayurá make combs with bamboo teeth, laced together with cotton twine. The teeth, usually 40 in number, are 4 inches in length, square at the upper end, tapering to flat sharpened teeth of the same size and shape of an ordinary large comb. As the teeth are thicker at the back, the comb is also broader at the back than on the edge. The teeth are woven together with fine cotton twine, the weave sometimes forming a solid band or, as is more common, forming separate triangular patterns. To hold the teeth firmly in line two strips of bamboo 4 inches long and one-half inch in width are laced together across the top, one on each side, and two more below the woven band, leaving approximately three-fourths inch of teeth projecting, the whole forming a firm durable comb. Here again, the Waurá women appear to be the better workers, for their combs are stronger and more effectively decorated.

THE ULURÍ (TAMEAHÓP)

The ulurí, which mature women wear over the pubis, is made from the inner layer of the bark of a tree. While the thin parchmentlike bark is still moist and pliable, a woman will cut out a piece 2 inches square. At the bottom she will leave a square appendage. This piece she will squeeze together lengthwise and make a hole through it to which she attaches the cord which passes between her legs. She now folds the bark to form a rough triangle 1¾ inches long and three-fourths of an inch in width, leaving a length of cord within the fold. She then ties the folded bast firmly with twine and allows it to dry. When dry, the twine is removed and the bast holds its form. To each end of the string which passes through the ulurí, the woman attaches the belt, which is made up of a coil of 10 fine two-ply strings of burití. The string which passes between the legs is made from fine strands of burití fiber, but instead of being rolled the strands run parallel and are held together by using one or the other of the strands to make a knot around the string at ⅛-inch intervals. The strands are thinned out as the woman proceeds from the ulurí, the cord being heavy at the attached end and tapering to a fine point at the loose end.

The men claim that misfortune will follow if they come in contact with an ulurí. An amusing incident will illustrate this attitude. One day I was busy talking to a number of Camayurá women and wished to know something about the manufacture of the ulurí. As it happened, there were some half dozen, which had been made to order, lying on a table some feet away. I asked one of the young men standing near to hand me an ulurí. The man first appeared not to have heard but when the request was repeated the man after a moment of indecision, took a stick and a piece of paper and sweeping the ulurí onto the paper handed it to me at arm's length, to the great amusement of the women.

THE SCRAPER

The scraper or scratcher (*yayáp*) which the Camayurá use for scarifying, is a triangular piece of gourd about 4 inches in length and 3 inches across the side into which the teeth are embedded. A row of small holes are drilled with a fish tooth one-fourth of an inch back of the edge and small teeth from the "cachorro" fish are tightly driven through the holes so that they project about one-eighth of an inch on the convex side of the scraper. The teeth are one-eighth of an inch apart and cut a strip about 2½ inches wide when drawn over the skin.

THE TECHNOLOGY OF THE CAMAYURÁ

After one remains among the Camayurá for a while and observes them at work and analyzes the techniques of production, one grows to appreciate the skill and precision of their workmanship and the quality of their products. The technology of these people is simple—simple in the sense that it consists of a limited number of artifacts, tools, raw materials, and sources of power, and the absence of a technical division of labor. Yet when one carefully examines a single artifact, such as a house, an arrow, or a piece of feather work, and judges it in terms of the total technological resources and the demands its production places upon the individual, it is anything but simple.

The manual dexterity of the individual worker is even more impressive than the complexity of the object. For many hours I watched a man at work making an arrow. Surrounded by lengths of cane, sticks for foreshafts, pieces of bone, rosin, feathers, twine, and coils of sipó vine, the man will carefully select the materials that are to be used for a special arrow in order that each piece matches the slight variations in size and length of the stem. Then with no other tools than a shell knife, a fish-tooth drill, sandstone, and leaf polishers he will go to work fitting the parts together, his display of craftsmanship being particularly striking in the sewing of the feathers to the shaft, the completed arrow being, not only an efficient implement, but a work of art.

All this, one might say, is a value judgment requiring comparative evidence for support. In comparing the bow and arrow of the Camayurá with the heavy crude bow and rough bone-tipped arrow of the Guató or the symmetry and excellent straw thatching of the Camayurá house with the palm-thatched shed of the Guató, one cannot avoid giving the award of excellence to the Camayurá. The contrast between the workmanship of the Camayurá with that of such highly acculturated tribes as the Terena and Caduveo is even more striking. These people have adopted the material equipment and techniques of the white man, but this equipment is of the poorest quality and is used carelessly and with little or no consideration for proper maintenance and care. Poverty may explain why acculturated tribes have low-grade equipment but it does not explain inefficient use and neglect.

The Camayurá, too, have material equipment like hoes, axes, knives, and a few rifles, which they have adopted. But it was noted with some surprise that the old Winchester rifles possessed by the Camayurá were clean and polished and in much better condition than the dirty, rusty rifles of the Caduveo. The culture of the Camayurá is still intact, their technology is of the traditional pattern. What they have that is foreign has been selected for a special purpose and does not interfere with the technology as a whole. The Camayurá are not hunters; the rifles are used for one purpose only, namely, warfare. They were war trophies in the first place and are highly valued as such. It appears that as warfare is an important activity the weapons of war are given great value and special care.

THE PREPARATION OF FOOD

In addition to the food products, utensils, and other implements required for preparing food for consumption, which have already been described, there is fire (*tatá*). To make fire the Camayurá place the point of a length of cane used for arrows in a notch made in a piece of soft dry wood and rotate it rapidly between the palms. When the wood begins to smolder the firemaker blows on the ember, adding dry buritì fiber until a flame appears. This act seldom has to be performed, as fires are kept going night and day. New fires are made by taking burning brands to wherever a fire is wanted. In the mornings when the people go to bathe in the river the boys take burning brands, usually holding two burning sticks together, and run to keep the brands burning. When they get to the river they light a fire to dry themselves after the bath.

The Camayurá say that they did not always have fire. In the beginning the people had no fire and dried their fish in the sun. Then Mavutsiné, the creator, told them to go and find fire. The people said, "We do not know where the fire is." Mavutsiné told them that fire was kept by *awará*, the wolf. When the Camayurá came to the place where *awará* lived they found him taking fish out of his trap. The Camayurá took a piece of buritì palm, lighted it, and ran away. The wood, however, was damp and the fire went out. They returned and stood around watching the wolf throw fish onto the bank. As the fish were flopping around one of them jumped into the fire and scattered burning brands in all directions and before the wolf was aware of it the Camayurá stole one of the brands and ran back to their village.

The Camayurá then go on to relate that they had difficulty taking fire from one place to another. The moon (*yai*) eventually had pity on them and taught them how to make fire with the arrow. Fire has a *mama'é* called *tataturiáp* which can be seen in the swamps at night By the description which the Camayurá give, this *mama'é* appears to be phosphorus. When *tataturiáp* is angry he burns houses and makes burns on people at night.

In discussing the processing of manioc we had occasion to describe the four basic manioc products from which foods can be prepared. These, as we have seen, were (1) *tiburatḯ*, the dried balls of grated meal, (2) *temių*, the dried tubers, (3) *tibuák*, starch flour, and (4) *mohét*, the juice which contained the starch. It is from these four products, with the addition of sweetpotatoes, corn, and fish, that the Camayurá woman prepares a number of foods.

The bread of the Camayurá, as we have said, is *menyú*, or the flat manioc cake. In preparing to make *menyú*, a woman takes a number of dried balls of *tiburatḯ* and grinds them with a heavy wooden pestle. She then sits beside the mortar with a *tuaví*, sifter, across her legs, with another sifter below it on the ground. She takes several handfuls of ground meal from the mortar and places them on the sifter and begins to work the meal back and forth in order that the finer particles will fall onto the sifter below, leaving only the heavier woody fibers which she throws away.

When she has prepared enough coarse flour she sprinkles a little cold water over it and works the moisture in. The resulting mixture is not dough but a moist, crumbly mass. While she has been thus occupied, the baking plate (*yapehé*) has been heating over a fire nearby. When the plate is hot enough she places two or three handfuls of flour on the plate and spreads it with a circular motion of the hand, working out from the center of the plate until the flour is evenly spread over the plate. She watches the baking cake carefully, periodically lifting one side and then another with the *menyú* turner (*iwép*). When the underside turns yellow, she turns the cake over with the turner and leaves it for several minutes but not long enough to turn yellow. The resulting circular cake is about one-eighth of an inch in thickness and 10 inches in diameter, baked yellow on one side but left white on the other. This she places on another *tuaví*. Sometimes the cakes are left flat but more often are folded over once.

Instead of using the dried balls, a woman can prepare flour from the dried tubers (*temių*). The tubers are ground and sifted in the same manner, the resulting coarse flour being of the same consistency.

A much finer *menyú* is made by mixing starch flour (*tibuák*) with *tiburatí*. As starch flour is scarce, this kind of *menyú* is baked only for visitors and during important ceremonial occasions. The two kinds of *menyú* can be distinguished not only by texture but by taste. The coarse *menyú* always tastes sour because the balls, when drying, turn sour. The starch flour, however, is not sour, and *menyú* made predominantly from this flour has a sweet pleasant flavor. *Menyú* tastes much better when it is hot and is usually eaten freshly baked; broiled or boiled fish can be placed in the fold to form a sandwich. When working in their fields the Camayurá drink gruel made by putting pieces of *menyú* in a calabash filled with water.

By boiling *mohét* long enough, the poisonous acid is removed. The liquid can then be drunk or can be boiled down still further until it forms a thick starch pudding called *kawí*. This is the evening food and is fed especially to young children. Fish, sweetpotatoes, or ground corn can be added to form *kawí* of different kinds.

Sweetpotatoes are baked in hot ashes and appear to be eaten at all hours of the day. When there is a large supply of sweetpotatoes and it is feared they will turn bad they are made into flour the same way as manioc. This flour is mixed with manioc flour and baked to form a special flat sweet cake called *yetikí*.

Fresh ears of maize are roasted before a fire. Dried kernels are ground to form a coarse meal and boiled to make a thick porridge. Cornmeal is also mixed with manioc flour and baked into a flat cake called *kawatsiyí*.

Piqui fruit, after being processed, is eaten by itself. Mangaba fruit is eaten fresh. As the fruit falls off when it is ripe, people can be seen each morning collecting and eating it near the village. Bocaiuva palm nuts can be peeled and eaten raw or can be roasted before eating. The soft pulp around the hard kernel is a nutritious food. Brazilian cattlemen sometimes boil these nuts in milk and it is said that a man is able to work hard all day on this diet. The small coco babão nut with its highly flavored pulp is eaten raw, as are numerous other nuts and fruits whose names were not determined.

Compared with the preparation of manioc and other plant foods, the cooking of fish and meat is very simple. The smoking and drying of large quantities of fish on long platforms has already been mentioned. These fish can be eaten off the platform or can be stored for later consumption. For broiling small fish from 6 to 12 inches in length, the Camayurá make a tripod about 18 inches in height held together by three cross pieces on which a layer of smaller sticks are laid. The fish are cleaned and placed on the sticks, and a small fire is kept going under them until they are done. If the fish are a little larger, four sticks instead of three are used. Fish are generally cleaned but are not scaled. But the Camayurá have no aversion to broiling uncleaned fish. If the people are very hungry a large fish will be thrown on red hot coals and even before it is done a woman will begin pulling pieces from the tail, putting them on pieces of *menyú*, and handing them to her children. Fish are also boiled in clay pots in which case they are first cleaned. The task of cleaning and preparing fish is the work of women, but the men make the platforms and tripods used for cooking.

Terrapins, which form an important part of the diet, are cut out of the shell and boiled, or are placed on their back, still alive, in a fire and roasted. Sometimes boiled terrapin meat is mixed with *kawí*. Even more important are terrapin eggs, large quantities of which are boiled or roasted in hot ashes. When boiled the white around the yolk is thrown away and the rich yolk only is eaten. When roasted, the shell cracks and the white dries up and the yolk takes on a strong, smoky, but not unpleasant taste. Terrapin eggs, like fish and meat, are eaten with the ever-present *menyú*. Diamondback turtles are prepared in the same way as the terrapins, the eggs, if found, being also eaten.

Meat, as we have seen, forms a negligible part of the diet. Monkeys, when shot, are skinned, cut up, boiled, and eaten only by the old men. Birds are skinned, cut up, and boiled or broiled on a tripod platform.

The Camayurá make no alcoholic beverage, drinking only water or water mixed with *menyú*. Wild honey, when found, is eaten directly from the comb.

ORGANIZATION OF LABOR

As has become clear in the preceding discussion of the processes of production, the major division of labor is on the basis of sex. Men are the real cultivators of the soil, for they perform the clearing and the planting of the fields. Men do the fishing and the hunting. Of the manufactures they make the canoes and bows and arrows, weave the baskets, carve the seats and gourd vessels, and build the houses. Women, on the other hand, do the spinning and weaving, make their uluris, make the pottery, process the food products, prepare the food for consumption, fetch water, and take care of the children. Women alone plant and pick cotton. Both sexes participate in the harvesting of manioc, sweetpotatoes, and maize, and in picking piqui, collecting firewood, paddling while traveling in canoes, in processing fish, and in making necklaces from beads or shell disks.

There is no clearly defined division of labor by age. Young people undertake adult activities as soon as they are able. In one family in which the mother had died, a girl of 10 processed manioc and did the cooking for her father and two smaller children. As has been said, boys follow the older men when they go fishing and hunting. Men and women continue to work as long as they are able. As they grow old they perform the more sedentary activities, such as wood carving, the making of arrows, and the preparation of ornaments.

Certain activities, like house building, planting, and fishing with timbó, are carried on collectively, all the men of the village participating in the task. When collective labor is undertaken it is under the supervision of the chief, although some other man may actually oversee the work, as in house building where the owner is the organizer. In collective enterprises the chief informs the whole village either the night before or at dawn of the day during which the work is to take place. He not only outlines what is to be done but gives detailed instructions as to who is going to perform the various phases of the work. For instance, in collective land clearing and planting, the chief appoints the axmen, hoemen, and the stalk cutters of manioc. No one, the Camayurá claim, refuses to obey the chief. The chief himself works with the other men and there are no tasks from which he is exempted. This is also true of the chief's wife or wives.

As has already been mentioned, bow making is specialized, there being at present four Camayurá who are experts in this task and who make all the dark rectangular bows which the Camayurá possess. Certain men are also experts at making canoes and ornaments and others are expert bird hunters. Shamans, of course, are specialists, their vocation depending upon a vision which they must experience in order to practice curing or other shamanistic activities.

There is no true division of labor in the same sense that two or more exclusive specialists are required to produce a given article. In collective enterprises, like house building, canoe making, and fishing with timbó, there are separate tasks, but these tasks can be performed by anyone, the personnel being interchangeable. In making a bow the specialists perform every task, from cutting and curing the woods to shaping the bow and preparing the bowstring.

OWNERSHIP AND INHERITANCE

The Camayurá have no large accumulations of property. Houses, tools, weapons, ceremonial articles, and ornaments are sufficient for current needs and for the requirements of exchange. Climatic conditions, the nature of the resources, and the methods of production do not demand the regularized storage of food products. Excesses of foods occur either by chance, as in fishing, or during an exceptionally good piqui harvest. As has been stated, manioc is kept in the ground until required. Crop failures or sickness among men, of course, create times of shortage and even distress.

Every married man owns his hammock, bows and arrows, dishes, a *tuaví* for keeping feathers, and various small gourd and basket containers for his tools and paint. When he goes on a trip he folds his hammock into a small bundle and hangs it on one end of his bow, while on the other end he suspends his small gourds or baskets. He also possesses a canoe equipped with paddles and poles. These articles he has made himself or has acquired through barter; they are his personal property. His unmarried sons or sons-in-law are permitted to use his bow and his canoe. At his death he rests in his hammock and his personal belongings are broken and left over his grave. His wife, similarly, owns her own personal objects like combs, the ulurí, ornaments, dishes, hammock, and tools.

The house, large canoes, guns obtained in raids, large pots, and important ceremonial objects, like masks, skirts, and flutes, are property of the house group. The house chief is the trustee of these objects, but they can be used by the members of the house group with his consent. These are not normally destroyed at the death of the house chief but come under the trusteeship of the new house chief.

The ceremonial or *jakui* house, the sacred flutes (*jakui*), and the sacred posts with the manioc *mama'ê* carved on them are the property of the village. At present the *jakui* house in the Camayurá village of Tuatuarí is not completed and these ceremonial objects are kept in the house of Turutsí.

We might say, therefore, that there are three kinds of property among the Camayurá: (1) village or tribal property consisting of the ceremonial house and the important ceremonial objects, (2) house group property consisting of the house and the larger objects used by the members in common, and (3) individual property made and used by individuals. There is some indication that songs and dances also are owned and inherited, but no adequate information on this subject could be obtained.

TRADE

Individual and tribal specialization among the Indians of the Upper Xingú has led to extensive trading and the incipient forms of markets. Although information on this important aspect of economic life is scanty, enough is known to outline the principal methods of exchange and the forces underlying it. Among the Camayurá there are men and women who are experts in the production of certain articles, such as bows, arrows, hammocks, and ornaments. These articles are bartered between the individual craftsmen. New articles such as knives, axes, shirts, and trinkets brought in by the Roncador-Xingú Expedition and the members of the writer's group immediately resulted in a wide circle of exchanges. A shirt given to a man one day would be on someone else's back the following day. Individuals within a village are, therefore, constantly exchanging personal belongings with one another. This kind of exchange the Camayurá do not, however, call trade (*moitará*). These individual exchanges are more in the nature of gifts and take place between fathers and sons, brothers, and most of all between friends. Haggling over values does not take place; a person gives the other party a gift and makes round-about indications concerning the article he would like in return.

In trade (*moitará*) the individuals between whom exchanges take place are not determined before hand. *Moitará* can take place between the people of one village or between the people of two or more villages. Intravillage trade is usually organized by a house group that has accumulated a surplus of commodities, pots, bows, ornaments, and even food. Some of these objects, such as large pots, may belong to the house group as a whole, others may consist of individually owned objects. The night before the *moitará* takes place the organizer will announce it in the plaza of the village. In the morning the articles to be exchanged will be set out either in the house or before it. The villagers then pass by, look over the goods, and decide what they want. They return to their houses and bring what they wish to give in return, and trading begins. If a man wants a pot, for instance, he will place his objects near it. If the owner of the pot wants them he will take them, after which the other party takes the pot away. If several people want the pot several piles of commodities will be placed before it, the owner of the pot having his choice. If he does not want the objects or there is not enough to satisfy him, he will eventually take his pot away to be traded on some other occasion. Although the organizer is the original offerer or seller, anyone in the village can bring objects which he wishes to exchange and place them in the seller's line. This may go on for several days until interest in trading ceases. Generally there is not much talking, exchange values being determined by the respective desires of the traders.

Intervillage trade is much more important because it arises from a tribal division of labor or specialization. The Camayurá are the expert bow makers, the Waurá are practically the only tribe which makes pottery, the Mehinácu make the best flutes, the Trumai are considered the best arrow makers, and the Nahukwá, Cuicúru, and the Calapálo are the expert necklace makers. The Camayurá say this division of skills was determined by Mavutsiné, for he gave the original people these articles and taught them how to make them.

The Tupí-speaking Auetí today hold a peculiar position in the trade circle of the Upper Xingú. They have become expert traders, for they not only obtain articles from the other tribes, but knives, axes, hoes, and glass beads from the Indian Service Post to the south which they trade for food, necklaces, bows, baskets, and other goods. Among the personnel of the Roncador-Xingú Expedition the Auetí are also known as the greatest thieves of the area. The Auetí also treat the white visitors differently. One day two Auetí families arrived in camp. The first thing they did was present each white man with several cakes of *menyú*, a hat full of roasted turtle eggs, and, in two cases, with tame weaver birds. They then waited for return gifts. In a day or two they received blocks of "rapadura," wire nails, and a few small knives. With these gifts they were dissatisfied, for on leaving they stole several sheath knives from the white men and some food from the Camayurá.

Intertribal trade is organized by a house chief, if the household requires large pots or ceremonial ornaments. Sometimes a whole village may be organized for such a trading expedition under the guidance of the chief. When a group of traders arrive they are led to the common house in the center of the village and after greetings and food they begin their trading. These trading expeditions take place during the rainy season when the country is flooded and the canoes can cross the flood plain, thus shortening the distance between villages.

Mutual aid between tribes appears also to enter into the trade pattern. The Camayurá relate that the Trumai were once near starvation and came to the Camayurá village for help. They needed food badly but had little or nothing to offer in return. The chief of the Trumai laid a pinch of piqui pulp before the Camayurá, the Camayurá responded by supplying the Trumai with food which enabled the men once again to undertake their economic activities. Although the Camayurá connect this event with trade, it might very well be related to religion and ceremonialism also, for some of the ceremonials begin with a bit of piqui pulp being laid aside as an offering, denoting supplication of the *mama'é* spirits.

The exchange value of objects is governed by a number of factors ranging from culturally determined attitudes, scarcity, amount of labor required in production, to individual desires at the time of exchange. The Camayurá readily admit that necklaces made from elongated snail shell disks are the most highly prized objects in the Xingú, followed in value by the round disk necklaces, rectangular bows, canoes, hammocks, pots, arrows, and food products.

The high value placed upon snail shell necklaces reflects not only their decorative value but also the time and skill needed in their manufacture and the scarcity of snail shells of proper size and quality. A Camayurá in normal circumstances will give two bows for a necklace of good quality. Canoes, on the other hand, although of great utility, are cheap, no doubt due to the plentiful supply of jatobá trees and the speed and ease with which they can be made. In exactly what quantities objects will be exchanged will, in the final analysis, also depend upon the individual wealth and desire of the two individuals involved in barter. While culturally determined values and economic considerations of scarcity and labor underlay exchange values, individual desires bring about variations from these norms.

What can happen to trade when these generally accepted cultural values are absent is shown by the rather absurd situations created when the white men tried to trade with the Camayurá. An Indian offered the writer a carved wooden stool for which he asked his tent in return; on another day, a woman wanted to trade a comb for a woolen blanket. For some trifling service an Indian would ask for an ax. On the other hand, a woman offered a necklace for a bright tin can with a lid which the writer was ready to throw away. In other words, exchanges were governed by individual fancies, neither party fully understanding the other's scale of values.

Money, of course, has not entered the Upper Xingú. One of the most interesting discussions the writer heard took place at an evening session around the village campfire during which a member of the Roncador-Xingú Expedition tried to explain money and its uses to the Camayurá in his halting Tupí. Some coins were passed around and the speaker explained that for various pieces of clothing, food, houses, services, etc., varying piles of money had to be paid. The Camayurá listened with great attention. One Indian eventually asked, "Who makes the money?" This question was not satisfactorily explained to the Indians.

Of the tribal groups seen, the Waurá appeared to be the most wealthy. The people were well fed and the numerous children appeared healthier and more energetic. The fact that the Waurá are the pot makers for the whole region may account in part for this wealth and well-being, for there is a lively trade in pots which break easily and must be replaced.

SOCIAL ORGANIZATION

Just as the technology of the Camayurá specifies the resources to be exploited and the tools and processes to be used in the task of making a living, so the social organization or social structure defines the relationships between individuals in the manifold activities which constitutes their social life. The rules and regulations that govern cooperation in the activities of production, the division of labor, exchange, ownership, inheritance, and intertribal trade have already been discussed as part of Camayurá economics. But there are numerous other activities concerned, for instance, with procreation, protection, and security, in which the relationship between individuals needs to be defined. As these relationships grow out of blood ties and are expressed in kinship terms, our study of social structure must begin with a discussion of the kinship terms and their behavioral implications.

KINSHIP TERMINOLOGY

The kinship terminology of the Camayurá is of the bifurcate merging type. (See chart 1.) In the grandparents' generation there are terms for grandfather, *tamuį́*, and grandmother, *utú*, which are used to designate both paternal and maternal grandparents and their siblings.

In the parental generation the term *hapá*, father, is extended to father's brothers although specifically a father's brother is called *paí*, little father. The term *amá*, mother, is extended to mother's sisters although the derivative term *aikamá* is also used. The more general terms *yerúp*, fathers or elders, and *hĩeĩ*, mothers, are applied to all old people and to ancestors. The term *apí* is applied to mother's brother and any man he calls brother, and the term *yaiÉ́* is applied to father's sister and any woman she calls sister. All these terms are used by both men and women.

In his own generation a man distinguishes his older brother, *awaį́*, from his younger brother, *irawí'*, and extends these terms to his father's brother's and mother's sister's sons. To designate sisters he has only one term, *iran'í́*, which he extends to his father's brother's and mother's sister's daughters. For cross cousins, both male and female, there is only one term, *yatuháp*. The terms employed by a woman in designating her relatives in her own generation are somewhat different from those used by a man. A woman calls her older brother *awaį́*, her younger brother *yekewí'* or *piá*; her older sister, *pipį́*, and her younger sister, *yekepeí'*. These terms she extends to her father's brother's and mother's sister's children. Like a man she has only one term for cross cousins, *yatuháp*.

In the children's generation a man calls his son *iraí'* (same stem as male sperm) and his daughter *iraiÉ́'* and extends these terms to the children of all men whom he calls brother. His sister's children he calls *niwą́* (nephew) and *niwaí'* (niece) and extends these terms to the children of all women whom he calls sister. If a man or anyone he calls brother marries a cross cousin the children will be sons and daughters or if a sister marries a cross cousin the children will be called nephew and niece. But if a cross cousin marries someone from another tribe, then the children of a cross cousin are called *timá*, male, and *katsivá*, female.

A woman, on the other hand, calls her son *yememurakÉ́* and her daughter *yememukunyą́* and extends these terms to the children of any woman whom she calls sister. To designate her brother's children she has only one term, *yepe'Ę́*, which she extends to the children of all men whom she calls brother. She uses the same terms for the children of cross cousins as the man.

A man calls the children of his sons, daughters, nephews, and nieces *yeremuminó*. A woman, however, calls the children of her sons, daughters, nephews, and nieces *yeremį́ariró*.

In the parental generation, excepting in-laws, the terms for affinal relatives are the same for both male and female ego. Although father's brother's wife is designated by the referential term *aikamá*, mother's sister, only descriptive terms are used for father's sister's husband, *yaiÉ irú*, mother's sister's husband, *aikamá irú*, and mother's brother's wife, *apí amerikó*. A man calls his father-in-law *irayuwÉ*, and his mother-in-law *irayó*. A woman, on the other hand, uses the terms *yemenúp* and *yemenĩ́* in designating her husband's father and mother.

A man calls his brother's wife *kyewiÉ'*, his sister's husband *niwarúp*, his wife's sister *mimiarúp*, and his wife's brother *itutít*. The terms used by a woman are different. She calls her husband's brother *kyeïwÉ*, her husband's sister *yeukeí*, her sister's husband *irá iraĩ́'*, and her brother's wife *yeukeí*. The term for wife is *yamerikó* (my wife) and the term for husband is *yairú* (my hubsand).

A man calls his daughter-in-law *yememúraké*, and his son-in-law *iratúp* or *irairatĩ́*. Although a woman calls her son-in-law by the same term as the man she uses *yemenutatÉ* to designate her daughter-in-law.

MARRIAGE REGULATIONS

Customarily a Camayurá will marry his *yatuháp*, cross cousin, for this is the "good" or preferred type of marriage. The term *yatuháp*, as we have seen, is applied to both male and female cross cousins, and neatly sets off, in one's own generation, marriageable kin from brothers and sisters. If a man is not able to marry his *yatuháp*, actual or classificatory, he can marry his *niwaí'*, sister's daughter. In the case of a woman this would be marriage with her *apí*, mother's brother. No marriage between a man and his father's sister was recorded.

Although residence among the Camayurá is patrilocal there is a short period of matrilocal residence after marriage during which the husband performs his bride service. This period is in essence a kind of trial marriage during which the capacity of the wife to bear children and the capacity of the husband to support his wife are tested. After the wife bears a child and the wife's parents are satisfied with their son-in-law, the man usually returns to his father's house with his wife and child.

If a man's first wife is barren, dies, or is otherwise unsatisfactory, he marries her sister. If he also takes a second wife he would try to marry his wife's sister. If for some reason a young woman is not able to find a husband, her sister's husband is obliged to marry her. In every case an actual sister is sought, for a man wishes to have only one father-in-law. Terminologically, of course, all female cross cousins are sisters to one another. In addition to the sorrorate and sorroral polygyny, the Camayurá also practice the levirate, for on the death of a husband his wife passes to the care of his brother.

In practice there are may deviations from these rules. At the present time there appears to be a lack of marriageable women, perhaps due to polygyny, barrenness, and the death of women in childbirth. If a man is not able to marry a kinswoman, he will obtain a wife from one of the friendly tribes or with the help of his kinsmen he will try to capture a woman from the Suyá.

The periodic lack of marriageable kin appears to be a fairly common characteristic among the numerically small tribal groups in the Xingú. The Arawak-speaking Iwalapetí, who not long ago had their own village, have been forced to disband by marrying out. The Iwalapetí men, however, claim that once they have fulfilled their bride service they will reunite and build their own village, for they and their sisters now have enough children to reconstitute a self-perpetuating group. Other tribal groups like the Tsuvá, Naravúte, and Custenau have, on the other hand, been so reduced in members that they have had to unite permanently with other tribes of their own linguistic family.

Temporary matrilocal residence also usually applies only to first marriages. If a man marries his wife's sister he does not have to repeat the bride service. When a man obtains a wife from a friendly tribe, the girl's father decides whether bride service is necessary. Bride service, of course, does not apply to captured women. The relative status of the tribes and their marriage customs are also important. Camayurá men and women insist upon living with their own tribe if they are married to Waurá or Trumai, for the Camayurá are accepted as having higher status. Camayurá men like to marry Waurá women, for they are the pot makers of the area and are also good weavers. Although Suyá women make good, hardworking wives, they are considered of low status and their children also carry this status. Nilo, for instance, would never discuss or admit the fact that his mother was a captured Suyá woman. But we were told he could never become a chief although his father, Tamapú, is the present chief. When daughters are married out the Camayurá father makes every effort to marry his daughter to an important man, such as a good wrestler or into a family where the men have a reputation for hard work.

EXTENDED FAMILY AND HOUSE GROUP

Although marriages outside the tribe temporarily complicate the general pattern, in the following generation or two the kinship system reasserts itself. In spite of the fact that there appear to be no clans or moieties, the marriage rules lead to a classification of kin into two groups. One group consists of fathers, brothers, and sisters, and the other of mother's brothers, their sisters and cross cousins. It is from this latter group that mothers and wives come and to which father's sisters and one's own sisters go. Terminologically, therefore, there are just two extended families related to one another through marriage.

In actual practice, however, the members of one's own extended family are separated into house groups. The house of Tamapú, for instance, was occupied by himself, his wife, four sons, two daughters, his son-in-law, his father's brother's son and his wife, and an old man whom Tamapú called brother. The core of the house group, therefore, consists of a group of brothers whose wives are sisters. The children call the men fathers and the women mothers. When the girls grow up they eventually pass over in marriage to the house or houses of their mother's brother and are replaced by their mother's brother's daughters.

Residence in a special house, however, is not obligatory. A man, his wife, and children may move to another house occupied by his classificatory brothers. When the house group grows too large some of the men may decide to build a new house. Often brothers from other house groups, similarly interested, join them. The man who organizes the house building then becomes the chief of the new house and it is named after him. When the house chief dies his son or younger brother takes over and the house is named after him. In other words, the house groups are local representatives of two larger extended families.

The house group is a unit of close cooperation. The occupants cultivate a common manioc field and share its products. The younger men go fishing practically every day, sharing the use of the canoes which generally belong to the older men of the house. The women work together in processing manioc and piqui, the large pots being the common property of the house, having been obtained through trade by the house chief. The house group sometimes moves as a body in making visits or in assisting their friends in other tribes to plant or process manioc.

The communal activities of the tribe in fishing and gardening do not conflict with those of the house groups. When the village works together in planting, they work in one or another of the fields belonging to a house group. When the field of a certain house group is cleared or planted, all the male members of that house group are obliged to be present. The men of other house groups ought to be present but if they have other duties they need not participate. A young Camayurá, Takuní, whom I used as an informant for some time, explained one morning that he had to leave next day for the village, for his house group was going to work their field. But I observed that he did not feel obliged to assist the other house groups. Fishing with timbó, to be successful, demands more extensive cooperation, and all men in the village work together, sharing the fish caught.

There does not appear to be a definite position for the families within the house. Tamapú, on our first visit, occupied one end of the house and on the following visit had his hammock at the other end. One rule, however, appears to be followed—the son-in-law must sling his hammock and that of his wife at the end opposite to that occupied by his father- and mother-in-law.

The primary functions of the house chief consist in the organization of the economic and ceremonial activities of his house group. In decisions concerning the whole village, the house chiefs and the tribal chief form a council and decide on a course of action. The tribal chief then announces the decision to everyone after dark or before sunrise the next morning and each house chief organizes his group to carry out the decisions, whether it be planting, fishing, house building, visiting, or ceremonial activity. He is master of his own family only. While others have to ask his permission to live in the house, he has no power to prevent families from leaving the house temporarily or permanently. Like the tribal or village chief, the house chiefs are elderly men, all are shamans, and all participate every night in meetings held around the fire in the central plaza. Here they smoke, discuss matters concerning the village, and make their decisions. Some of the house chiefs are important men, not only among the Camayurá but among the other tribes as well. When an Indian is asked who is the chief of the village he will mention the chief's name but will immediately name one or two other men who are considered chiefs as well. Among the Camayurá they always refer to Maricá as an important man. They also usually mention Jurúna who was captured as a boy from the Jurúna tribe. This appears to indicate that personal prestige is important, this prestige arising not from a possession of great wealth but from ability to be a good provider and good organizer of economic and ceremonial activities.

THE FAMILY

Although the family may be monogamous or polygamous, monogamous families are by far the most common. Only two men were observed with more than one wife, each having two wives. Each family hangs its hammocks together but not necessarily always in the same part of the house. Near them, the husband and wife keep their personal belongings such as bows and arrows, urucú paint, gourds of oil, baskets, waterpots, ornaments, and materials used in manufacture of twine, beads, and featherwork. At night each wife keeps a small fire going near her hammock. In the two cases where a man had two wives it was the younger wife's hammock which was slung under that of the husband.

Although the family is always a part of a house group and carries on the basic economic activities in cooperation with the other members of the household, the family, nevertheless, has considerable autonomy. A man may take his wife and children into another house or even to a neighboring tribe. One man with two wives spent several weeks with the Trumai collecting terrapin eggs and planting manioc; a number of families remained in the camp of the Expedition for several weeks—during our stay in the region. Although families moved about at will, they never lost their rights in the house group to which they belonged.

The relationship between the cowives is very close and no apparent disagreements or conflicts were observed. They process manioc, fetch wood and water together, alternate in cooking food, and share in the care of each other's children. Younger sisters still below the age of puberty often live with their married sisters, participating in adult activities, particularly grinding manioc meal and baking *menyú.*

The authority of the husband over his wife increases gradually. For a year after marriage he lives with his father-in-law and is under his control. During this period he works in the field of his father-in-law, fishes for him, and carries out any tasks demanded of him. The wife also is still under the control of her father and mother. This is considered a test or trial period. If the young couple are agreeable to one another and if a child is born or on the way and the father likes his son-in-law the marriage is considered a success. But if these conditions are not present, the man himself or his father-in-law can terminate the marriage. These marital circumstances are illustrated by the case of Tamapú's daughter Tipurí. She is still, by common assent, accepted as the most beautiful woman in the tribe. When she reached puberty she was married to the champion Iwalapetí wrestler, but because the husband was not able to keep her from consorting with other men Tamapú sent the wrestler away and gave Tipurí to the wrestler's brother, Canatu, her present husband. Canatu is also a good wrestler and is also a hard worker. The couple now have a child, and Canatu says that he can now go wherever he wishes. He says that when the Iwalapetí reestablish their village he will go and live with his own people.

Even after the husband has gained complete rights over his wife, he is still under the control of his father so long as the father lives. It is only after the father dies that the husband is the complete master of himself, his wife, and his children, this control being limited, however, by his membership in the house group and the tribe. The family as a structural unit, for which the Camayurá have no name, does not stand alone. It is always a part of the house group, the kindred, and the tribe. The autonomy which middle-aged men have over their families extends particularly to their children and the freedom of movement in visiting.

Once a husband is accepted by his father-in-law he is expected to control the behavior of his wife. Good wives, by custom, are supposed to remain at home, work hard, and take care of the children. But young wives are the target of young unmarried men and even of married men. Among mature men sexual intercourse with other men's wives is not considered a major crime. If a wife commits adultery the husband beats her but says nothing to the man concerned, often going fishing with him on the following day. Opportunities to commit adultery are provided at dawn when the young people go to the river for their morning bath, or when they go to fetch wood and water. It is not a difficult matter for a man to waylay a woman on the way.

Wife beating for adultery was overheard on more than one occasion. Yet several cases were known where an elderly husband ignored the matter completely and had to be admonished by the chief. On the other hand, faithfulness is also demanded of the husband by a young wife. On two occasions Tipurí accused Canatu of trifling with young married women. On both occasions she became so angry that she began to throw sticks and stones at him. To escape his irate wife, Canatu took refuge in the house occupied by the members of the Expedition. She followed him in and before about six whites drove her husband into the corner and proceeded to beat him with her hands. This continued until the head of the camp intervened and took her aside and calmed her down. Canatu meanwhile remained indoors with a sheepish grin on his face until he too was reprimanded by the head of the camp.

As in any community, there were husbands and wives who behaved well and others who did not. There were also two young women who had been married several times, but as they had not given birth to children they were no longer wanted as wives. These two women moved about from house to house and even from tribe to tribe, consorting with various men but always returning to the house where their brothers lived. No particular criticism was leveled at these women. Sterile women eventually settle down with their brothers or sisters and live out their lives assisting their relatives.

Until the age of puberty the mother takes care of the children and exercises authority over them. Although the father and the grandparents assist in this task, it is the mother who orders the children about, calling them in to take their meals, and keeping them in the house after dark. Until about the age of 8 years the children have great liberty; having few duties they spend their time playing or just observing their elders. After this age they begin to participate in adult activities. The girls begin to process manioc and cook food and the boys go fishing with their fathers. Both the boys and girls, however, are still under the authority of the mother. At no time was a father observed talking angrily or striking his children. Mothers, on the other hand, often reprimanded their children for not carrying out the tasks allotted to them or for carelessly injuring smaller children while playing. This was particularly true of boys who played with bows and arrows. In administering corporal punishment, mothers slapped the children over the head and shoulders with their hand. Beating children with a stick was not observed. Fathers sometimes showed discomfort while the mothers were chastising the boys. One father even complained about the fact that the mother beat his son too often. In this case the mother was an Iwalapetí woman and the husband may have felt ill at ease because a woman of another tribe was beating his son whom he considered a Camayurá.

During puberty and afterward the children come under the authority of the father. This is particularly true of the sons. The puberty seclusion is a severe test in itself and any infractions are punished by withholding food and in more complete isolation. After the puberty rites, improper conduct such as disobedience in carrying out tasks or by failure to show proper respect to relatives and elders is punishable by scarification. Refusal to undergo scarification as a form of punishment may lead to exile, the most severe form of punishment the Camayurá impose. Seclusion, even after a boy or girl has completed his or her allotted time at puberty, can also be resorted to as a form of punishment. Nilo, while at the Expedition camp, broke into a house with a few other boys and took a few blocks of "rapadura." The camp head complained to Tamapú, Nilo's father, who, when Nilo returned to the village, put his son in seclusion for about 2 weeks. The idea behind this form of additional seclusion is that the youth had not yet learned to behave as a grown-up and had to be treated as a boy at puberty.

After puberty the father continues to exercise great authority over his sons. They cannot marry or leave the village without his consent and must return home after a given length of time. Young men fear the anger of their fathers and try not to break the rules of proper conduct. One day the writer asked two young men to paint themselves in the designs used in the various ceremonies so that they could be photographed in color. The young men kept putting off answering the request. When presents were offered they explained that their fathers would not allow them to paint themselves in these colors which were used only at the time of the ceremonies. They agreed, however, to paint themselves in the woods. Later in the afternoon they stole some of their fathers' urucú paint and piqui oil, painted themselves, and were duly photographed in the woods after which they removed the paint by washing in the river.

Although daughters are in more intimate daily contact with their mother and follow her instructions, they, too, are under the authority of the father. He can punish them by scarification or seclusion for misbehavior or, as has been mentioned in the status of chiefs, they can be refused the symbols of rank.

The relationship between brothers is one of great intimacy, resting as it does on daily cooperation in economic activities, mutual aid in cases of disputes with nonfamily members, and the fact that they are responsible for the upbringing of each other's children in case of necessity. At death the wife and children of a man pass to the care of his brother. Brothers, when young, are seen continually together, playing and imitating the activities of their elders. When mature they wrestle with one another, joke, and play tricks without any show of respect.

The relationship between sisters is similarly based on cooperation and is close and intimate. They may become cowives and may bring up each other's children. A brother is responsible for his dead brother's wife and children but if no brother exists, the widow will go to the house of her sister. If the mother is dead the younger sister may live permanently with her married sister, as was the case of Tipurí and her 10-year-old sister, as a sister is a much closer relative than a stepmother. This is also true of boys before the age of puberty. No special respect was observed between sisters and brothers. While Nilo was in seclusion his younger sister spent much of her time behind the screen preparing his food and talking to him.

The relationship in the family between parents and children, brothers and sisters, is one of intimacy. The father has unquestionable authority over the entire family. Until the children are about 8 years old the father plays with them and appears to be very indulgent. This attitude, however, changes at puberty. The attitude of respect for the father was quite noticeable in mature individuals. They spoke little with their fathers and listened with downcast eyes when the father spoke to them. While young children sat in the father's hammock older sons and daughters avoided their father's hammock. This respect is extended to the father's brothers. If a young man or woman behaves rudely toward his or her father's brothers the father might punish the offender with scarification. Mother's brothers, however, appear to have no authority over their nephews or nieces and no special respect is paid to them. The mother's sister is treated like a mother. The father's sister is treated with the respect due an older woman. The attitude toward cross aunts and uncles, of course, changes if they become in-laws.

Very clearly defined rules govern the behavior of in-laws. Bride service for a year during which the son-in-law must reside in the house of his father-in-law, establishes respect relationships which continue throughout life. Although brothers-in-law participate in gardening, fishing, and ceremonial activities, they show the greatest formal respect toward one another. A certain degree of physical distance must be maintained. They never place their hammocks near one another. Brothers-in-law cannot touch one another and they avoid going about arm in arm, which is common between young men. They cannot wrestle or talk nonsense or joke, nor can they use personal names when speaking to one another. It was amusing to observe Nilo when Canatu, his brother-in-law, entered the room. He would stop talking and slowly edge away, or if both were being used as informants at the same time they would be careful not to speak at the same time and would avoid meeting each other's eyes. If one used the name of the other when referring to another man of the same name he would spit, as if to avoid something due to mentioning his name. If any of these rules were inadvertently broken both parties would feel ashamed, but there appeared to be no formal punishment or compensation.

A son-in-law would show even greater respect toward his father-in-law. He would place his hammock at the end opposite that used by his father-in-law. He would wait to be spoken to by his father-in-law and would answer him with downcast eyes. A son-in-law must carry out all orders given to him by his father-in-law. It is his duty to cultivate the land, fish, hunt, and prepare arrows, baskets, and other objects for the use of his wife's father and her brothers. If the father-in-law is displeased with the conduct of his son-in-law he can reprimand him; if no child has been born he can send him away from the house. Once a child is born the position of the son-in-law becomes more secure and he can continue to live with his father-in-law or he can move back to his father's house.

A mother-in-law must be strictly avoided. A man can never speak directly to his mother-in-law but must speak through his wife or some other person. If he must speak, he looks away from her while speaking. Generally a man has little need to converse with his mother-in-law, as this contact is maintained by his wife in the daily activities of the household.

THE TRIBE

The Camayurá tribe is a kinship society. The approximately 110 members of this society live in one village and in intimate day-to-day contact with one another. Kinship terms are not only applied to everyone but the actual kinship relationships of everyone are known. Men and women captured from enemy tribes are incorporated into the society through marriage and are given appropriate kinship status. Except for marriages outside the tribe, affinal relatives are also consanguineal relatives. Cross-cousin marriage and the conjugal family serve as mechanisms for the perpetuation of the kinship structure expressed in kinship terms and the body of rules which defines the duties and obligations and the forms of intimacy and respect between kinsmen.

As descent is bilateral, a genuine Camayurá is one whose father and mother are both Camayurá. Men and women incorporated into the tribe through marriage, although given status as in-laws, are not considered Camayurá. Their children, however, are half Camayurá and their grandchildren, if the children marry pure Camayurá, are accepted as genuine tribesmen. Nilo, for instance, is half Camayurá and half Suyá, owing to the fact that his mother was a captured Suyá woman. His father claims, however, that Nilo's children will be accepted as Camayurá. As more women than men are incorporated into the tribe, women of pure descent distinguish themselves by the three horizontal lines tattooed on their arms, as has already been mentioned. A Camayurá, then, is a person who can trace his or her descent back through both mother and father to the *camiuva* tree from which Mavutsiné made the original ancestors of the tribe.

This mythical event took place at Morená, a region where the Kuluene and Ronuro Rivers join to form the Xingú River—specifically on the long sand spit formed by the junction of the two rivers. As one stands on the sands of Morená surrounded by the bright green forest and listens to the murmur of the rapids a mile or so down on the Xingú, one cannot help thinking that the Camayurá chose ideal surroundings for their birth.

Mavutsiné, the myth tells us, lived at Morená. He was like a man but he had no father and no mother. He walked around Morená and felt lonely. One day he took a piece of wood and carved it into the shape of a woman. Then he made a cigar out of tobacco leaves and as he smoked, he blew smoke over the wood and stroked it with his hand. Little by little the carving began to live and finally turned into a beautiful woman. Mavutsiné called her *Noitú* and took her as his wife. He had sexual intercourse with her, and she began to swell. She became bigger and bigger until she gave birth to a child. This first child was the sun, *kuat*. Then once more Mavutsiné had intercourse with *Noitú* and again she grew bigger and bigger until she gave birth to another child. This child was the moon, *yai*.

After creating *Noitú*, the sun, and the moon, Mavutsiné made the Camayurá out of *camiuva* wood. First he made *Karanavarí*, *Kanaratí*, and two women. Then he made *Yanamá* and *Vanivaní*. He made them early in the morning and the people were so cold and stiff they could hardly walk. All that day Mavutsiné sang and shook his gourd rattle. Slowly he led the people to a fire and as they warmed themselves the stiffness left their joints.

Then Mavutsiné told the men to make four villages: *Karanavarí* made a village at Ronuro, *Kanaratí* at Urukulú, *Yanamá* at Morená, and *Vanivaní* at Vanivaní. He told them to bathe in the river at dawn and to whistle while they bathed. He told them to have sexual intercourse at night and to work during the day.

After this Mavutsiné made all the friendly tribes of the Upper Xingú. The enemy tribes were made by the moon. Mavutsiné also made two sisters called *Tanamakarú*, who gave birth to the *Caraiba*, white men. He told them all where to settle.

The Camayurá consider themselves a distinct people because Mavutsiné created them from *camiuva* wood, and they also believe that the territory around Morená is theirs by divine right. The leaders of the Roncador-Xingú Expedition say that the places mentioned in the origin myth as being settled by the first Camayurá show signs of old settlements. One of these places was visited and the numerous large piqui trees were unmistakable evidence of previous habitation. Furthermore, the origin myth is no idle tale told around the evening fire but is a living belief, for every year during the *kwarúp* ceremony the creation story is reenacted.

The Camayurá no longer live at Morená although they lay claim to the piqui and mangaba trees and the rights to fish and collect turtle eggs in the area. The Trumai live in the area by the consent of the Camayurá, and others can use these waters by permission. The Suyá, Shukaramái, and the Jurúna sometimes invade this territory, leading to open conflict. While the Camayurá care little about fishing in the main streams by the friendly tribes, they maintain sole rights to the small tributaries near their villages of Tuatuarí and Ipavú.

At the head of the tribal organization is the chief (*morerekuát*). Although no specific myth or tale was obtained about the origin of chieftainship, the occurrence of the word for sun (*kuat*) in the term for chief appears to indicate some relationship to the sun. It was also observed that some women who were members of the chiefly family had three small parallel lines tattooed on their wrist or on their shoulder. These lines, although specifically named *yu*, were also called *morerekuát* and the women claimed that it showed that they were related to *Noitú*, the mother of the sun, the first woman. There appears to be no doubt that the chief and his male relatives belong to a group that holds rights to chieftainship.

The present chief, Tamapú, although having chiefly rank, is not considered in the direct line. The former chief who was killed about 5 years ago by the Shukaramái was considered of higher rank. Some of this difference in status is due to the status of mothers. Although Nilo is the eldest son of Tamapú, the chief claimed that Nilo would not succeed him because his mother was a Suyá. The two younger boys, whose mother was high caste, are, he said, eligible to chieftainship. The chief's present wife is not considered of chiefly status so that her baby son likewise is of lower status. When asked about his eldest daughter married to an Iwalapetí, Tamapú explained that although she was of high birth she did not wear the marks of the chiefly class because she had misbehaved morally, this being her second marriage. This seems to indicate that chiefly rank although obtained through birth is maintained through correct behavior.

The rule of birth and correct behavior is followed when the question of succession arises. The mature men in council decide which of the dead chief's relatives are to succeed him—a son, a younger brother, or a brother's son. In addition to these two factors, the chief is always a *payé*, shaman. Quite early in life he must prove his aptitude in getting in touch with his *mama'é*. Besides his shamanistic powers he must be a man versed in tribal lore and customs, an economic and ceremonial leader, a councilor and settler of disputes.

As has already been mentioned, the chief organizes all communal fishing trips, clearing and planting activities, movements from one village to another, the reception of visitors, and the making of trading and ceremonial visits to the villages of the other tribes. His instructions are given after dark in the evening or before sunrise in the morning. With bow in hand he walks around the plaza of the village stopping before each house to make sure that everyone hears him.

Our first visit to the Camayurá village was followed by one of these reception speeches. After all of us had gone to our hammocks and the village had settled down for the night, Tamapú's strong voice could be heard speaking in the soft, nasalized accent of the Tupí language. He mentioned each of us by name (five men), why we had come, and according to one of the group who understood some Tupí, repeated word for word what each of us had said during the course of the afternoon and evening. This and subsequent speeches revealed Tamapú to be an able orator and a man possessing an exceptional memory.

Although the chief is a man of rank, respected for his wisdom and leadership, there is nothing in the way of external symbols to mark him apart from the rest of the tribesmen. His house is like those of the others, he has no special ornaments, he works with the other tribesmen, and he is not given food or other gifts or tribute. His difference in position is shown by his functions but, as we shall see later, his status as chief is shown in a particular form of burial.

Whether the Camayurá tribe is to be considered a political group depends upon how one wishes to define a political society. It is true that the Camayurá lay claim to a certain territory and if attacked will defend themselves and their territory as a unit. Yet raids into enemy territory for the capture of women and children or to settle feuds created by former raids or counterraids are not made by all the men of the tribe but by a number of young men under an elected leader. The Camayurá are emphatic in saying that the chief is not a war leader. If the village is attacked he will, of course, assist in the defense, but he never organizes defense or attack. In other words, there is no explicit extrafamilial bond which unites the Camayurá on a territorial basis and under a chief for the purpose of exercising force against the neighboring tribes.

In the maintenance of internal order there is the same absence of authority invested in a single person. The chief has no judicial powers backed by force. The only specific crime against the group as a whole which the Camayurá could recall was the breaking of taboos surrounding sacred objects. And here, too, the measures taken referred only to women. If a woman, even by accident, were to lay eyes on the sacred flute (*jakui*) all of the men of the tribe would take her into the woods, have sexual intercourse with her, and leave her to die. The only other case in which the whole group would take action against one of its members occurs when an individual repeatedly breaks group customs. A mean, quarrelsome individual who constantly injured others physically would be exiled from the tribe.

Besides banishment from the tribe there appears to be no other way of punishing injuries committed by one person against another. In fact, the Camayurá say that only individuals who are under the influence of witchcraft would hurt others. The Villas Boas claimed that they had never seen or heard of fighting between the men of the village. When asked about stealing, the Camayurá would laugh and say that only children took things away from one another. No action was taken against an adulterer, who generally was an actual or classificatory brother. They could not recall that anyone had ever committed incest and could say nothing about its punishment.

Although the Camayurá fear witchcraft, they say that blood relatives do not practice witchcraft against one another. All the individuals whom they accused of having caused illness through witchcraft turned out to be members of other tribes or men who had married into the tribe. If it were believed that someone caused the death of a person through witchcraft, such a person could be killed by the brothers of the victim either by direct force or by counterwitchcraft. How ever, no cases of this kind were discovered.

We have seen that the Camayurá divide their neighbors into enemy tribes and friendly tribes. Relationships with enemy tribes are on a permanent war footing characterized by raids and counter-raids. The members of enemy tribes are well known. Their names are remembered and a record of the past deeds of every enemy warrior is kept alive to be settled at some future date. When recounting a raid the Camayurá mention by name the enemies who were killed. Jurúna who was taken from the Jurúna tribe when a boy explained that in a certain raid in which he participated as a member of the Camayurá, his father was killed. Witchcraft, however, is not practiced against enemy tribesmen.

Relationships with friendly tribes, on the other hand, are characterized by trade, intermarriages, and joint participation in ceremonies. While the relationships are friendly they are tense. When other tribes visit the Camayurá, they enter the village very formally. Ceremonies and trade are carried on according to strict rules of etiquette. At night the visitors withdraw from the village and sleep in the woods. The element of competition in ceremonies and trade give rise to suspicions and in some cases to ill feeling. These enmities are believed to be the causes of witchcraft. Yet these individual suspicions and tensions do not appear to lead to open ruptures between the Basin tribes and are to some extent counter-balanced by kinship bonds established through intermarriages.

The sanctions which govern the behavior of the Camayurá are inherent in the kinship relationships. Every individual knows from childhood what his duties and attitudes toward prescribed classes of relatives are to be and what he can expect from them. The chief is an economic and ceremonial leader, guiding communal activities prescribed by custom, and carrying out decisions reached by common consent. Ultimate authority rests in the tribal council which meets nightly around the fire in the center of the village. The council is composed not only of the chief and the house chiefs but of all mature men. The decisions made by these men, who are kinsmen, is binding upon the women and children and those young men who have not, as yet, had shamanistic experiences and who thus have no right to smoke. This society, based on kinship, carries out political functions in so far as force is exercised, but we would look in vain for any relationship other than kinship that binds individuals to the chief and which gives the chief rights to exercise authority sanctioned by force.

RELIGIOUS BELIEFS AND CEREMONIES

In his brief but accurate description of Camayurá masks and dances, Von den Steinen (1894) stresses the artistic aspect of the dances, masks, headdresses, and other ceremonial gear, and as the Camayurá stated that the designs represented fish and birds, he was led to the belief that the ceremonies were merely fish and bird dances. Our investigations of Camayurá ceremonial life, on the other hand, had not proceeded far before it became clear that the rituals, in particular, were complex affairs in which a belief in spirits, spirit impersonation, and the use of sacred objects were definitely related to a concern over the perpetuation of the tribe, the security of the food supply, and other economic resources. Underlying not only the religious beliefs and practices but the entire economic and social order are the myths which account for the world as it appears to the Camayurá.

ORIGIN MYTHS

A very general type of culture hero in South American Indian mythology is a supernatural being who finds and releases Indians from the earth or from mountains, later establishing them in certain areas and giving them, if not all, many of the principal elements of their culture. Mavutsiné differs from this kind of culture hero in that he created the sun and the moon as well as the Camayurá, their friendly Indian neighbors, and the two women who later gave birth to the *Caraiba*, white men. These acts made Mavutsiné more of a creator than a culture hero. Although the Camayurá say loosely that Mavutsiné created everything, yet specific myths relate only the creation of the sun, moon, man, and many of the primary elements of their culture. It would appear that the land, rivers, trees, animals, and fish already existed, for we first hear of Mavutsiné walking around Morená and feeling lonely.

In the creation story wood plays an important part. *Noitú*, the first woman, was made of wood. The word *Noitú* seems to contain the stem *utú*, grandmother. Mavutsiné then married *Noitú* who gave birth to the sun and the moon. According to the Camayurá, the sun and the moon are brothers but not twins. The ancestors of the Camayurá were made by Mavutsiné from the wood of the *camiuva* tree. The word *camiuva* appears to be made up from the two stems *cami* plus *uva*. *Uva* in Tupí is the leaf of a tree. The word *Camayurá* also is made of two stems, *cama* plus *ivirá*. Ivirá in the Camayurá dialect means tree. The stem *cami* or *cama* looks surprisingly like the Arawak word *kame*, sun. If this analysis is correct the Camayurá are people of the sun tree. The *camiuva* tree has, even today, magical significance and is in a sense the sacred tree of the Camayurá, for from its wood they make the central posts which support the ridge pole of the house and the posts used in the annual ceremony for the dead.

The mythical period did not end with the creation of *Noitú*, the sun, the moon, and the ancestors. There appears to have been a time during which all these beings lived together at Morená in a village called Morenáwas. In this period many events took place, only some of which were clearly described to us by the Camayurá. The sun, *kuat*, seems to have been a great benefactor in his own right. He taught all the Indians how to use timbó in fishing. After Mavutsiné had made the *jakui* flute he handed it to the sun who played it so well that Mavutsiné gave it to him. The sun then taught the ancestors how to play it and presented it to them as a gift. Later he taught the Camayurá all their songs and dances and the puberty rites which they must practice. Among these ceremonies the annual *kwarúp* is of the greatest importance. The word *kwarúp* seems to contain the stems of *kuat*, sun, and *irúp*, father or ancestor. The moon, *yai*, although a lesser figure, also performed creative acts. He taught the people how to make fire, in addition to performing rather a foolish act by creating the enemy Indian tribes. The mythical ancestors also performed many miraculous and culturally important acts. *Yanamá*, for instance, created *tupãn*, thunder and lightning, well known in Tupí mythology. From *aikán*, the fish, *Yanamá* obtained the bull-roarer (*urivurí*) in exchange for toucan feathers. Later *Yanamá* gave the bull-roarer to the piqui tree who taught him how to make piqui oil. *Kanaratí*, another ancestor, captured the large hawk (*apacaní*) which brought death to the world, and rode into the sky on its back visiting the world of spirits. The Camayurá now believe that the airplane is *apacaní* returned. In these mythical times, too, there was a great flood, although the Camayurá gave no clear account of it.

The four ancestors appear to have had incestuous relations with *Noitú*, for although Mavutsiné made two women at the time he created the ancestors they say nothing about these women marrying the four men. *Noitú*, who sometimes is described as being a woman, is also described as a jaguar. She is the wife of Mavutsiné, the mother of the sun and the moon, and also the secret wife of the four original ancestors and it is from her that the Camayurá sprang. Mavutsiné himself could take on many forms. Sometimes he is described as having no thumbs.

In the myths there is also a hint of evil caused by the shortcomings of the original ancestors. The Camayurá made a bad choice when they ignored the guns and chose the bows; they are weaker than the white men because of this mistake. For their carelessness in not guarding the original manioc field planted by *pakoin*, manioc has never grown so well since. The capture of the hawk (*apacaní*) brought death to the world. Incestuous relations with *Noitú* angered Mavutsiné and may well have caused his departure along with *Noitú*, the sun, and the moon.

THE MAMA'Ê

Before Mavutsiné and the other mythical beings left, he created the *mama'é* spirits to watch over the welfare of the Camayurá. The word *mama'é* appears to be derived from the word *amá*, mother. The spirits are individualized and intimately connected not only with the health of the people but also with the growth of the animal and plant species upon which the welfare of the people depends. The Camayurá state that all the Upper Xingú tribes have these spirits. The *olé* spirits of the Trumai, *papataím* of the Waurá, the *apapalú* of the Iwalapetí, the *mopít* of the Auetí, and the *etséke* of the Cuicúru and the Calapálo are referred to by them as *mama'é.* They also add that shamans from various tribes often work together in soliciting the aid of the *mama'é.*

The *mama'é* are said to live in the woods and in the air and can be seen and heard by the shamans or initiates. They appear to have various forms and some are much more powerful than others. When a man speaks of his own *mama'é,* he describes them as being dwarfs with white hair and long black beards. The *mama'é* connected with plants are described as being birds, insects, animals, and fish. In some cases no description of the spirit was obtained beyond the symbols carved on posts or masks.

When questioned as to what happened to an individual after death the informants kept repeating "*mano, hopap*" (dead, finished). In an effort to ascertain whether the informants knew what the question on hand was, we explained the idea of soul and ghost. The informants appeared to understand, for one man claimed that the Suyá have such a belief. He related that a captured Suyá woman got up one night to put wood on the fire and saw her dead brother standing nearby; but he then went on to say that the Camayurá do not see people after they are dead. The above statement appears to indicate that the Camayurá believe in ghosts (*ang*) but that they do not see them or fear them.

RITUALS

The ritual center of the Camayurá village is the *jakui* or flute house. Although at present only partly built, the Camayurá informed us that when completed all the sacred objects used in the dances would be kept there. Among these sacred objects, the three *jakui* flutes appear to be of the greatest significance. These flutes are about 36 to 40 inches in length, 3 inches in diameter, and are made of cane (perhaps a large piece of uba cane). Just back of the mouthpiece there is a hole and at the lower end there are four holes used for finger stops. A series of diamond-shaped designs in black cover the upper surface of the flute. When playing the flute the player is seated on a stool, his head thrown back and his arms stretched to the limit so that his fingers can reach the stops at the lower end. During ceremonies the three flutes are played together, the players being seated next to one another. The *jakui* flute has a deep resonant tone not at all unpleasant to a white man's ear.

These flutes, as has already been mentioned, were made by Mavutsiné and presented to the Camayurá by the sun, who also taught them the *jakui* songs and the dances which accompany the tunes. The *jakui* flutes, in addition, have a powerful *mama'é,* called by the same name, which appears in the form of a bird. The term *jakui* is also the Camayurá word for the jacobí, a large bird related to the curassow family.

Another flute which is considered sacred and dates from the mythical past is the *kurutai.* This flute is similar in form to the *jakui* but is only 20 inches in length and about 1½ inches in diameter and is made of bamboo. It also has a *mama'é* and is kept in the flute house, but we were unable to determine the form of its *mama'é.*

Closely associated with the *jakui* flutes is the sacred *jakui ikatú* mask which may be no more than a symbol for representing a *mama'é* of the same name. The mask is carved from wood in the likeness of a human face. These masks are well described by Von den Steinen (1894) who associates them with the fish dance of the Auetí and Camayurá.

The *yokaká* is a special gourd rattle that is used in many of the dances, particularly in the *kwarúp.* As this rattle was not seen, no description of it can be given.

Another sacred object of great importance is the *urivuri,* bull-roarer. It has a *mama'é* of the same name and was given to *Yanamá* by *aikán,* the dogfish. The bull-roarer is about 18 inches in length, is shaped like a fish and is covered with painted zigzag lines or diamond-shaped designs in red over a black or white surface.

At least these five sacred objects are tabooed to women in so far as women are prohibited from touching or even seeing them. These objects are kept wrapped in bark and fiber wrappings when not in use. If a woman were to see any of these objects her hair would fall out, she would swell, and become very ill. In the case of the *jakui,* if any man observed a woman looking at this flute she would be subject to gang rape and then left to die in the forest. Another version of the story states that the woman is obliged only to have sexual intercourse with all the men in the village in order to assuage the anger of the *jakui*. As the men in the village include the father and many who are brothers of the woman, this act would imply incest. Gang rape, however, does not seem to apply in case a woman breaks the taboo in connection with the other sacred objects.

These five objects date from the mythical past. The *jakui*, *kurutai*, *jakui ikatú*, and the *yokaká* are gifts from *kuat*, the sun, while the *urivurí* was given by *aikán*, the dogfish, who assisted in planting the original manioc field. They all have powerful *mama'é* who, although the special guardians of fish, can be called on for other kinds of assistance also.

There are other sacred objects that represent *mama'é* which are not tabooed to women and in the rituals of which women can, in some cases, participate. These objects and their attendant *mama'é* are closely allied to certain plant species of great importance to the Camayurá. Among these are the three posts representing the *mama'é* of manioc, the headdresses representing the *mama'é* of the piqui tree, the jatobá tree, the genipapo tree, and the urucú bush.

The three manioc *mama'é* are represented by three sacred posts on which the conventional symbols are painted. The *ïhī́t* is in the form of a T about 12 inches in length. The *ivét* is a half-moon about 6 inches in length, and the *ivirát*, three vertical lines about 36 inches in length. It is interesting to note that the word *ïhī́t* is also used for the carved stick with which manioc roots are dug from the ground, and the *ivét* is of the same shape and size as the *menyú* turner (*ivép*). The word *ivirát* signifies wood or tree, the term also being used for the digging stick employed in planting, which we sometimes heard as *ihirát* or *ihirá*. The similarity between the spirit emblems and the principal tools used in cultivating and preparing manioc for food is striking.

Although the Camayurá stated that rituals were performed in connection with the growth of manioc we were not able to observe them. Von den Steinen (1894), however, refers to masks and masked dances, called *hüvát*, in which 2 staves 80 cm. long, called *haété*, were used. The resemblance between the word *ivét* and *hüvát* is close, and when he describes the staves as having dogfish teeth attached to a triangle, fixed to a T at the end of the stave the comparison with the T-shaped *ïhī́t* is difficult to avoid. Von den Steinen then goes on to explain that the *hüvát* is a fish dance similar to the *koahálu* of the Auetí. The only direct connection we were able to obtain between manioc and fish was the origin myth in which the mythical gull (*pakoin*) obtained the help of fish, particularly the dogfish (*aikán*) and the *wahiú* to plant the first manioc field. Although the Camayurá did not state that the symbols represented fish, it may very well be that the symbols represent fishlike guardian spirits who originally gave the Camayurá manioc and the implements for its cultivation and use. Of course, if in the future some observer were able to see and analyze the manioc ritual, presumably the connection between the myth, spirits, symbols, and manioc itself would be clarified. The writer feels fairly certain, however, that the symbols do not relate to actual fish or to the *mama'é* of fish (*yakuyeép*) but to fishlike guardian spirits.

There are two headdresses which represent *mama'é* that are considered by the Camayurá to be closely connected with the piqui tree and its growth. One is the *kinemeú* which looks like a skullcap of woven burití fiber, to the top of which is fixed a cross about 12 inches high. The cross is said to represent an insect which lives in dead burití trees and which the Camayurá draw on paper, as shown in figure 2. The other is the mask *mawurawá* which represents another insect similar in form to that represented in the *kinemeú* but with longer antennae.

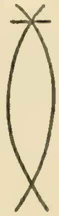

FIGURE 2.—An insect, which lives in dead burití trees, represented by cross in headdress, as drawn by the Camayurá.

RITUAL DANCES

The beginning of the rainy season is signalized by the sounds of numerous insects and the roll of distant thunder to the northeast. Late in August when we heard a certain large cicada in the woods, the Camayurá would say that the rain is coming soon. These sounds are a signal not only for planting but for a cycle of ritual dances, which the Camayurá call *kwarúp*.

In addition to being the general name for the ritual period lasting several days, the *kwarúp* is a special dance in commemoration of the dead. All those who have died during the year are represented by wooden posts cut from the *camiuva* tree. These posts are about 3 feet long and 10 inches in diameter with vertical lines of triangles painted on them in black and white. The posts representing men have faces carved on them and are decorated with cotton belts, feather headdresses, and designs painted with genipapo and urucú.

These posts, called *kwarúp*, are prepared in the woods and are brought into the village just before dawn on the shoulders of the men. While the posts are underway all the women and children must remain hidden in the houses behind closed doors, and visitors from neighboring villages must remain outside the village. As the men enter the village they walk slowly and stiffly singing a song while the leader shakes the sacred rattle (*yokaká*). The posts are then set into the ground in a row in the center of the plaza.

A special messenger, called *pariá*, then goes out and brings in the visitors, leading them with a burning brand. The women and children come out of the houses and everyone gathers around the posts and begins to sing. Customarily there are four leading male singers. In the origin myth these four singers were two cotias and two frogs. This is also the occasion during which all the boys and girls who have been in puberty seclusion come out and dance around the posts, the girls with their long hair pulled down over their faces. One of these girls offers the village chief and the visiting chiefs a little of last year's piqui from a gourd vessel. Later these girls have their hair cut, put on their ulurí, and are considered mature marriageable women. In fact, as the marriages are already arranged, the grooms cut their bride's hair and the brides tonsure their husbands. When the *kwarúp* is finished the posts are thrown into the river.

On analysis the *kwarúp* appears to be something more than just a dance for those who have died during the year. In the 1947 *kwarúp* the Villas Boas stated that nine posts were brought into the village although nine people had not died that year. One day I drew a number of posts on a piece of paper and asked one of the Camayurá whom they represented. Without hesitation he named the first four as *Kanaravarí*, *Kanaratí*, *Yanamá*, and *Vanivaní*, in other words, the four original ancestors. He then mentioned two names which I took to be the names of important men who had died in the past and three posts he called simply *kwarúp*. As the Camayurá do not use the names of people for some time after death I concluded that these three represented members of the tribe who had died during the year. Furthermore, the posts are cut from the sacred *camiuva* tree from which the ancestors were first made, a rattle is used, and the song sung around the posts is the same as that sung by Mavutsiné when he created the Camayurá. These facts seem to indicate that not only do the ancestors come back to join the tribe for the *kwarúp* and to receive the dead but that the whole ritual strangely suggests a reenactment of the creation myth. The word *kwarúp* itself has a resemblance to the stems of the two words *kuat* (sun) and *yerúp* (my ancestor) and also to *irú* (husband) which with *apitahók* are the terms used for marriage. The joining of the young people in marriage in the presence of the ancestors and the living appears to be a symbolic act the purpose of which is to perpetuate and increase the tribe. The Camayurá say that if they do not perform the *kwarúp* the tribe would die out. As their origin was due to a creative act of Mavutsiné, so their perpetuation depends upon the annual reenactment of the myth in which a tribal marriage ceremony is performed in the presence of the ancestors.

The *tavurawá* follows the *kwarúp*. In this dance a number of men dressed in burití fiber skirts, with feather headdresses and with leafy boughs fastened to their arms and shoulders dance around two men stationed in the center of the plaza. One of these men is seated on a stool beating the ground with a large gourd which emits a dull booming sound. The other man stands just behind him shaking a rattle. Around all the men dance a number of women. On the following day women with long-tailed ulurí dance in circles. On the third day a woman comes out of a house and is followed by a number of men in skirts and headdresses; they dance around the plaza stopping before each house.

The Camayurá explain that this dance is given to make trees and plants grow, particularly the piqui and mangabeira. The beating of the gourd may represent thunder and the swaying bough-covered dancers may represent growing plants. Support for this interpretation is given by the fact that if rain is slow in coming the dance can be repeated with the use of the *urivurí*, bull-roarer, which is specifically used to induce rain.

Then comes the *turuwá*, which is the dance of the jatobá tree spirit. A man impersonates the spirit dressed in ceremonial attire. As Von den Steinen saw one of these dancers fully dressed we shall use his description of the *turuwá* dancer:

> Besides the masks for the *hüvát*, we observed among the Camayurá an enormous web that looked like the *hualóq* of the Bakairí, having more or less the form of a mushroom with cap and stem. The upper part of the body of the dancer was covered by the cap more or less to the umbilicus and the stem of the mushroom was formed by the hanging fibers. One could see painted with the "mereschu" pattern a quarter of the surface of the cap limited by pieces of sipó resembling antennae; on the top of the cap rested another stem more or less like the *imeo* of the Bakairí but covered with thick woven material painted with the same designs and finishing in a grass edge. The object is called *turua*; in Guaraní *turú* means "various creatures that live in water," which in Tupí according to Martins its meaning is *Tentheredo*, a kind of wasp [Von den Steinen, 1894, ch. xi, p. 317].

The *turuwá* is followed by the *kinemeú* or the dance of the piqui tree spirit. The *kinemeú* headdress with its antennae represents an insect, as we have seen. The dancer, in addition, wears a burití fiber skirt and cape so that he is covered from head to foot. He dances to the accompaniment of singing and the shaking of rattles.

In the *kwarúp* cycle, there is at least one more dance called the *kuhahá*, about which, however, we were not able to gather any information.

In December when the piqui fruit ripens the Camayurá go to the old village of Ipavú to perform the *mavurawá* dance in honor of another piqui spirit. During the dance a man impersonates the spirit, dressed in a costume very much like the *kinemeú* but with longer antennae. He is offered boiled piqui fruit and eats with the people while they sing. Men, women, and children participate in the ceremony. At night the men play the *jakui* flute in the flute house. Following the *mavurawá* there are no more tribal ceremonies until the beginning of the dry season in April when the cycle of *jakui* dances begins along with the secular dance, the *jawarí*.

THE JAKUI

At the beginning of the dry season in April when the rivers begin to go down and the products of the field and forest diminish, the Camayurá begin increasingly to depend upon fish for their daily food. Associated with the change in the season and in economic pursuits they hold a series of rites connected with the *mama'é* of fish, known collectively as *jakuyeép*. These masked *jakui* dances are performed by men only, either in the flute house or in the plaza. During the performances women and children must remain secluded in the houses. In addition to the masks, the dancers wear headdresses representing birds and animals. Although a number of these headdresses were seen, the Camayurá were reluctant to say much about them so that no detailed information about the performances were obtained. They admitted, however, that one of the most important of these masked dances was the *jakui ikatú* (the good or great *jakui*). In most of these dances rattles are used and, in some cases, as in the *jakui ikatú*, the flute *jakui* is played. About the purpose of these dances the Camayurá say little except that they help "to bring the fish."

The sacred *jakui* rituals are followed by the great public ceremonial known as the *yawarí*. For this game or contest the Camayurá always invite one of the neighboring tribes, such as the Waurá, Auetí, or the Trumai. The *yawarí* was obtained by *kuat*, the sun, from a mythical tribe known as the *Panyetan*, who later presented it to the Camayurá. Another version is that it originally belonged to the Trumai who taught it to the other tribes in the Upper Xingú.

The *yawarí* is essentially a contest in which representatives of two tribes try to strike each other by throwing an arrow with the spear thrower (*aravú*), the man serving as a target trying to avoid the arrow by shielding himself behind a bundle of sticks which he holds upright in his hand.

The word *yawarí* in Camayurá means a species of wildcat (*Felis pardalis*). The performers cover themselves with white clay over which they paint red or black spots resembling those of the jaguar, which often covers the face, chest, arms, and thighs. Some also paint themselves with designs which look snakelike in appearance. The ankles and knees are wrapped with embira lacings and the performer wears the customary belt of cotton string. The arrows or spears are from 5 to 6 feet in length, tipped with a round tucum nut in order to avoid puncturing the skin if a performer is hit. The shield consists of a number of sticks about 7 feet long tied together to form a round bundle about 10 inches in diameter. While the lower end of the bundle rests on the ground the player moves the bundle from right to left in front of him so as to meet the flying arrow or to cause it to glance aside. The object of the contest is for the thrower of the arrow to strike the defendant in the legs. The side which gets the greatest number of strikes is the winner. Although blunted arrows are used, many severe bruises are sustained by the players.

Galvão, who saw the *yawarí* at the Camayurá village, describes it as follows:

> When we arrived at the Camayurá village, a group of young men were being trained to dispute the *iawari* with the Waurá or the Auety. The target was a straw doll. They decided to meet the Auety whose village was nearer than that of the Waurá. To this village, after intensive training, were sent three messengers who, on their return, brought a piece of *emvira* (bark) in which were five nuts to indicate the number of days it would take for the Auety to arrive. The visitors were presented with large quantities of food for they camped outside the village. On the night of their arrival the Kamaiurá lit fires in the plaza and practiced shooting at a straw doll. The Auety did the same, retiring to their camp after their chiefs had talked for some time with the Kamaiurá chiefs. On the following day the *iawari* contest took place, lasting for two hours. The Kamaiurá came out the winners. The two groups of men lined up—each facing one another, dancing and singing, while in the space between a player was trying to spear his antagonist. When the contest was over the Auety retired to one corner of the plaza where one of the Kamaiurá chiefs armed with a bow and arrow knelt in front of the Auety and made a speech and wept. Women accompanied the speech wailing in a loud voice. Over a pot of manioc porridge were placed two spear throwers with their respective arrows which were later burnt. The Auety then left being again presented with gifts of meal, sweetpotatoes and beijus [Carvalho, 1949, pp. 44–45].

CEREMONIAL DRESS

The standard dress of a man is a fine burití fiber string around the waist, called *yakualáp;* that of the women, the ulurí, or *tameoháp* as it is called in Camayurá. Better dressed men and women add to this the *moit,* a string of small flat snail shell disks. Women wear the *moit* around their necks while the men wear it around their waist. Today blue or red "store" beads are often substituted for the snail shell disks. A more highly prized necklace, made from rectangular pieces of snail shell, called *yepoít* is worn on ceremonial occasions. On special occasions the men also wear a narrow cotton band (*ininobutikó*) tightly bound above the biceps on both arms. When yellow feathers are glued to the arm band it is known as the *ariwarí.* Both men and women also wear a narrow cotton band just below the knee known as the *yeiwikwáp,* and on all festive occasions the men wrap their ankles with many yards of embira bark lashing to the width of about 8 inches. This binding is known as *yepitawáp.* As urucú is used almost daily all materials take on a reddish-brown color. When participating in dances the women wear a special ulurí, the tail of which sticks out stiffly behind their buttocks to about 8 inches. Diadems made from red and yellow macaw feathers with three long feathers standing upright over the forehead are worn by men in many of the dances. In addition to burití skirts and capes, featherwork capes are reported but were not seen. Small earplugs and long feather pendants are common among men.

In addition to the seasonal rituals associated with the *mama'é,* the Camayurá have a secular dance called the *uruá* which can be performed at any time. The word *uruá* is applied both to the flute and to the dance. The *uruá* is a double flute made by fastening together two long tubes of bamboo, the long tube being 7 feet in length, the shorter tube about 5 feet. Each tube is made by joining two halves of bamboo cane together with pitch and lacing. Although the tubes are about 2 inches in diameter and long, they are, however, quite light. The *uruá* flutes are played in pairs, the two players moving side by side. The flute has a deep resonant tone with a high and a low note.

The two players begin playing inside of a house, come out, face one another moving back and forth, swinging the flutes to right and left, then side by side they move rapidly until they come before the doorway of the next house, repeat the swaying movements, enter, come out, and repeat again before moving to the next house. They move from house to house, going around the plaza in a counterclockwise circle. The rhythm of the dance is stamped out by the right foot. Beginning usually at about 4 o'clock, the dance continues until dark. As they proceed two women painted with urucú and with the ulurí string sticking out behind join them. Each follows the man in front of her with one hand on the man's shoulder.

Besides the two sacred flutes, the *jakui* and the *kurutai,* and the secular flute (*uruá*) the Camayurá have the pan pipe, *avirarê.* The five slender bamboo tubes, graduated in length, are held in the left hand without being bound together. Almost every young man has a set of these pipes which he plays whenever he is in the mood. They appear to have no ritual significance and are not played in any group performance. These four flutes and the rattle appear to be the only musical instruments of the Camayurá. No drums were observed.

It must be mentioned that the public ceremonies like the *kwarúp* and the *yawarí,* in which the neighboring tribes participate, are not restricted to dances alone. These public gatherings afford opportunity for trading (*moiterá*) for wrestling contests and feasting. Wrestling (*oyetúk*) is an important form of entertainment throughout the Upper Xingú area. For weeks prior to the public ceremonies young men train for the wrestling contest and each tribe selects a number of champions, weight being taken into consideration. Just before the contests the champion wrestlers avoid sexual intercourse, live on a restricted diet, and sleep in the woods. The wrestlers meet in the center of the plaza, each man being painted with urucú and wearing the usual arm and leg bands. The two contestants face each other in a crouching position and for a moment go around in a circle facing each other and pawing the ground with one hand uttering *huca, huca, huca,* in a loud challenging voice. They then face each other on hands and knees, each trying to get hold of his opponent. The favorite hold seems to be to grasp the opponent by the wrist with one hand and to get a head lock with the other arm. In the tussle the contestants rise to their feet in an effort to throw each other. If one contestant breaks the other's hold they part and repeat the performance until one is thrown on his back. This ends the contest. Throughout the match each side cheers its champion, and the winner is cheered by all. Brazilians who have wrestled with the Camayurá say that they are very strong and follow strict rules and never lose their tempers or take unfair advantage of their opponents. Young men gain prestige through wrestling just as older men gain prestige through shamanism and the performance of rituals.

An integral part of every public ceremonial is the feast. Large quantities of manioc flour is prepared, packed in leaf-lined burden baskets, and stored in an upright silolike structure on one side of the village plaza. This structure may be as high as 12 or 15 feet. Large quantities of fish are broiled on long babracots and left on the babracots to be shared later among the people. The prestige of the village is enhanced when there is an overabundance of food. There is certainly an element of conspicuous display and even waste in the way that the food is handled. Although the visiting tribesmen eat apart, the chief of the village distributes the food among them in a ceremonial manner. All visitors leave with gifts of food.

SHAMANISM

The art of sorcery and healing, the Camayurá say, was taught to the ancestors by the bemteví, a yellow-breasted flycatcher. He taught them how to grow tobacco and how to use it in shamanistic performances. Other birds, such as the jacobemba and the yapurí, are also shamans and, like the bemteví, are feared by the Camayurá, for they are believed to cause illness when angry. None of these birds are killed by them.

Illness, the Camayurá believe, is caused by the injection of foreign objects into the body by an enemy, and the art of healing consists in removing these objects known as *moan,* which may be small pieces of charcoal, beeswax, or tobacco. The shaman, *payé*, is able to perform either of these acts. The Camayurá appear not to have the belief in soul loss as a cause of illness.

In the rite of sorcery, as in curing, tobacco plays a central role. Tobacco, *petím*, is believed to have a powerful *mama'é* of the same name, which can draw out or can inject pieces of itself, i. e., tobacco, into a human body. In addition to this inherent capacity, tobacco has the power to call the spirits, which then carry out the orders of the shaman.

The spirits which assist the shamans are known by the general name, *mama'é*, and, according to the Camayurá, are dwarflike, with white hair and black beards. These spirits differ from the *mama'é* of the rituals, who, as we saw, are not anthropomorphic in appearance, although tobacco can be used to bring one into contact with them as well. These anthropomorphic spirits do not appear to be ghosts of the dead, for the Camayurá say emphatically that they do not see the ghosts of dead people.

A man becomes a *payé*, shaman, during a serious illness. All men sooner or later become shamans although only a few become expert healers. When a young man becomes seriously ill, his father or some other old man initiates him. They smoke together until both fall into a trance. The father then draws out the object that caused the illness, and it is from the nature of the object that the father determines the *mama'é* of his son. When the young man gets in touch with his *mama'é*, he sees it and hears a chant that is the special property of that *mama'é*. By middle age most men have several *mama'é*. It must be mentioned here that the same process is involved in getting in touch with the *mama'é* of plants and of the sacred objects such as the *jakui* and the bullroarer. A man has the right to impersonate a *mama'é* in any of the rituals only after he has made contact with it through a smoking ceremony.

Tamapú, the chief, claims that he has only one *mama'é* called *marakapú*, Jurúna has three whom he called *kurutai* (the small sacred flute), *marikuwá*, and *yaripuá*. Although women and children have *mama'é* they do not see them. A sure way of finding out whether a man has been initiated is to offer him a cigarette. If he refuses to smoke it, it signifies that he is not initiated. One day when a middle-aged woman took one of my cigarettes I asked her if she were a *payé* and she nodded her head. On investigating the matter I found that she was a Waurá woman. The Camayurá claim that their own women never become shamans, although very old women sometimes see their *mama'é*. They also state that a young man, during the burial of a shaman, sometimes sees the dead shaman's *mama'é* and hears its song. This *mama'é* then becomes his guardian and assistant. Such men are highly regarded by the Camayurá.

Simple cures appear to be performed solely with the aid of tobacco and its *mama'é* and are almost a daily occurrence in the village. One could always tell when a shaman was curing, for he made a characteristic grunting sound which could be heard at a considerable distance. I shall quote from my notebook a description of one of the first cures which I observed:

> The one-eyed shaman was curing a small boy who was said to be suffering from pains in the head. The mother was seated in her hammock, holding the boy in her lap. The shaman squatted near the fire smoking his long cigar and inhaling deeply. Then he approached the hammock, blew tobacco smoke on the boy's forehead, wiped it several times with his hand and began sucking. He would draw in his breath with a loud wheezing sound and then exhale with a deep groan. After repeating this for about six times he went over to one of the house posts and squatted before it with his back turned to the people. He blew downward through his cupped hand making a noise like a horse neighing. As he exhaled he let saliva run out of his mouth and through his hand. After awhile the neighing sounds came faster and faster until a lot of saliva came out of his mouth. The shaman then wiped his hand on the house post and went back to the fire and after smoking for awhile repeated the performance. He did this four times.

In more serious cases of illness, in which sorcery is always suspected, a much more complex curing ceremony is required. Several shamans act together under the guidance of the one who has been asked to effect the cure. First they must avoid sexual intercourse for several days. Those who have had contact with a woman the night before take an emetic to purify themselves. Each shaman then puts on his necklace, *takupeá*, which is made from the wood of the plant whose roots provide the emetic. They then go into the woods at night, smoke, sing, and shake the sacred rattle, *yokaká*. They then begin to run around in the woods calling to one another. Eventually, one of the shamans captures a *mama'é*, wraps it in leaves, and they all return to the village to cure the sick man. The imprisoned *mama'é* is placed next to the body of the man. The shamans all smoke and sing. The owner of the imprisoned *mama'é* then sucks a part of the sick man's body to remove the dangerous object. Next day the bundle is thrown into the river to release the *mama'é*.

One day Jurúna described his sickness and a cure in which a number of shamans participated.

> I went fishing one morning and while I was busy fishing I suddenly felt a sting or bite in my side. When the sun was in the middle of the sky I began to shiver and I sent for Kantú, the Iwalapetí shaman. That night Kantú and six other shamans went into the woods and brought back a *mama'é*. They smoked and sang and the Iwalapetí shaman sucked out the *moan* [he later showed us the object, a sliver of burnt wood about an inch in length]. When I saw the *moan* I knew that it was the *mama'é* called *yarúp* which had caused it to enter my body and I also knew that this *mama'é* belonged to a Cuicúru. I paid the Iwalapetí shaman a necklace for curing me.

THE LIFE CYCLE

BIRTH (IMEMURUÁT)

The Camayurá recognize that sexual intercourse and the introduction of male semen into the womb is necessary to bring about pregnancy (*eheruá*). The word for semen (*iraí*) is the same word as son. The word for womb is *iraimá*, which appears to be made up of the stems *iraí*, sperm or son, and *ma*, place where anything dwells or grows; as for instance the word for deer, *capimá* (capim, grass, *ma*, lives or grows). The Camayurá appear to think of semen as the seed which when planted in a woman grows into a child. A man is thus considered the effective cause of birth and the creator of offspring. Men state that turtle eggs and piqui fruit are conducive to increased sexual intercourse and increase the chances of bringing about pregnancy.

Pregnancy is regarded with great satisfaction by both the husband and the wife and even more by their respective relatives. As we have seen in our discussion of the family, a marriage is not fully consummated until a child is born to a young couple. Although regarded with satisfaction, pregnancy is also considered a period of danger, for the fetus may be lost before maturity, the child may be stillborn, or may be born a cripple, or twins may be born.

During pregnancy both husband and wife observe certain food taboos. They avoid eating large fish without scales and the flesh of turtles and turtle eggs. This restricts their diet to manioc products, small scaly fish, and piqui. These three basic foods, as we have already seen, are guarded by powerful *mama'é* that are believed to influence their reproduction and growth. It often happens that a young couple have to go without piqui and eat scaly fish only when they are caught. These food restrictions cause the young couple to loose weight and to appear emaciated and weak.

Birth takes places in the house near the prospective mother's fireplace. As no screens are erected, the act of birth is open to the public and anyone is at liberty to observe the act, including children. The prospective mother sits on a stool or a flat piece of wood and is assisted by an old woman experienced in these matters. The midwife squats behind the mother and presses her abdomen to assist delivery. The midwife severs the umbilical cord with her fingernail, ties it with cotton twine, and rubs ashes over the wound. The placenta is buried beneath the hammock of the mother. The mother then lies down in her hammock, and the child is wiped with burití fibers dipped in water and is placed in the hammock with her.

During this performance the father is present and continues to remain in the house for a month or until the wife has her first menses after birth. During this period both continue to observe the food taboos and the husband avoids economic activities, the relatives supplying the needs of the couple.

After observing the birth of a boy, the writer returned 6 hours later to find the father blowing tobacco smoke over his son. The next morning the child was completely covered with urucú paint, with spots of jatobá resin over his chest and abdomen, cotton strings tied above the biceps and below the knees, and with a snail-shell necklace much too large for the tiny neck.

A few days after its birth the father and mother each give the child a name, each using the name which he or she has given. These two names will be used until a boy reaches the age of 7 or 8 when, after his ears are pierced, he will be given a new name by an older relative who performs the ear piercing. At puberty a boy receives a permanent name which has once belonged to an ancestor.

Girls continue to have two names until puberty, when they too receive an ancestral name. Until children are weaned the father avoids making bows, for it is believed to cause diarrhea in the children.

The birth of twins (*mokoinwát*) and cripples are considered a misfortune. If twins are born, all men and women in the village take an emetic and vomit. The father and mother continue vomiting for several days. The husband leaves his wife for a time, vomiting and fasting. He may even leave his wife permanently. It is believed that the *mama'ê* are angry at the couple for sex misdemeanor or for breaking the food taboos.

Twins, like malformed children, are buried alive by the relatives of the couple. This is also done if an unmarried woman gives birth to a healthy child. One of the members of the Expedition related that he observed a bastard child being buried alive and how horrified he was to hear the infant crying even after it was covered with earth. Some days later I observed the woman lying in her hammock in the woods just outside the camp, where she had to remain for several days without food or attention near the grave of her child. The poor woman was still bleeding and paid no attention to the help which we tried to offer her.

Women practice abortion by drinking a medicine (*pirai'í*), made from the bark of a tree, and give as their reason the fact that as they have to nurse a child for 3 or 4 years they cannot have another child during this period. Even casual observation appears to substantiate this claim. If a woman conceives while nursing and abortion is not successful, the midwife will strangle the child.

The culturally determined practices of selection at birth at first might appear difficult to correlate with the unquestioned desire of the Camayurá for offspring. The Camayurá want offspring, and, as we have seen, will capture women and children in order to increase the numbers of their tribe. The demographic position of the Xingú tribes is a precarious one. Since 1887, there has been a great numerical decrease, whole tribes have disappeared, their remnants uniting with groups of the same linguistic stock. The killing of malformed children in a society where survival depends upon the economic efficiency of each individual is understandable, but the killing of twins and the spacing of children 3 or 4 years apart is not so clear. Infant mortality is high and the families are small.

The widespread prevalence of abortion and infanticide among the Indian tribes of Mato Grosso is a matter which appears to require a thorough analysis by a medically trained person. It may well be that these customs rest upon a sound physiological basis. For instance, are the nature of the foods eaten and the prevalence of intestinal parasites such that a child has to depend upon its mother's milk for 3 or more years in order to survive? Are mothers unable to nurse twins successfully? What is the relation of the number of conceptions to the number of births?

THE CARE OF CHILDREN

For the first 3 or 4 years the child is practically attached to its mother's body. During the night it sleeps on the mother's body in the narrow hammock and during the day it is carried straddling the hip, held by the mother's arm. During this period the child suckles whenever it pleases and defecates and urinates without restrictions of any kind. On numerous occasions when I was speaking to a woman with a child on her hip the child would defecate, whereupon the woman would ask me to reach in a tree for leaves. After she had wiped her thigh and leg with the leaves, the conversation would continue. If the woman had a boy child we had to be careful to stand at some distance in order to avoid the stream of urine.

While nursing, the child would twist the nipple of the other breast and even when not nursing, a child would keep grasping the breasts and twisting the nipples. At no time was a mother observed restricting the movements or desires of a child-in-arms. With male babies the mothers paid particular attention to the penis, adjusting it so that it would not be squeezed while sitting on the hip.

There appeared to be no explicit attempt to teach a child to walk or to talk. In fact small children were discouraged from crawling about on the floor of the house. When not attached to their mothers, they were held by the father or some older child or were left to move around in the hammock. This lack of early movement is due in part at least to the fear of fire. As every woman had a small fire near her hammock, hot ashes or embers covered a good part of the floor space of the house. It was also observed that mothers made every effort to prevent small children from picking up bits of food from the dirt floor and putting them in their mouths. Various insects like scorpions, spiders, and, above all, jiggers, are a threat to small children. A number of 4-year children were seen with their feet entirely covered with jiggers, which had caused infection. Bringing up babies under these conditions thus appears to be hazardous, and the long nursing period and the effort to keep the baby off the ground correlate with real dangers to its life.

Weaning and walking appear at about the same time. The first foods given a child are baked sweetpotato and boiled manioc gruel. Older children now assist the mother in guarding the child. It is washed in the morning and again in the evening. When it wishes to defecate it is taught to squat over a gourd vessel, although it is not punished if it accidentally defecates on the floor. When it is able to chew it is given such solid foods as *menyú* and broiled fish. In the course of these new activities it picks up the vocabulary associated with the objects, individuals, and events with which it comes in contact. From the age of 3 to 6 the child is treated with great consideration and kindness by the parents and the older children. It is permitted to observe and be present at all events, to sleep and eat when it wishes, and to move about the house and play at will under the watchful eye of the older people. But no special fondling or tenderness is showered upon it. I never observed older persons kissing, tickling, or fondling children with their mouths or hands as is commonly done among us.

Evidently the kindness and consideration shown to children is closely connected with the kinship relationships and the associated patterns of behavior. Among the Camayurá there was a 6-year-old boy who was an orphan, and as its mother had belonged to a foreign tribe the child had no classificatory mother. The boy was under the care of a woman related to the father. The behavior of this child was in marked contrast to the rest. He revealed his feeling of insecurity by showing fear. One day when a group of children were asked to take injections and submitted with an attitude of curiosity and with no show of pain, the orphan boy tried to flee, and when brought back he cried, squirmed, and struggled to the extent that it was impossible to treat him. To attempts of kindness on our part he responded with moody, suspicious silence.

At the age of 6 years boys are given small bows and arrows with which they play from dawn to dusk. A game known as *wauwá* is played by boys between the ages of 6 and 12 years in the plaza of the village. The game consists of two groups of boys standing about 100 feet apart, armed with bows and arrows. A boy in one group throws a small hoop toward the other group, and as it rolls along the ground each boy tries to shoot it. The one who strikes the hoop is cheered. He then picks up the hoop and throws it back toward the other group, who likewise try to shoot it. The hoop is made of grass wound with sipó vine and is about 8 or 10 inches in diameter. The harder it is thrown the more difficult it is to hit. Late afternoon appeared to be a popular time for this game.

Almost every morning when I went down to the river to wash I observed a number of boys below a tree shooting at birds no larger than a robin, and as birds sometimes fell dead from the tree their marksmanship was evidently good. From the age of 6 on, boys accompany the men on fishing trips, participating in the shooting of fish with bows and arrows, the younger boys shooting at small fish that are hidden in the weeds near the bank, the larger ones taking full part in the activities. Actually boys of 12 to 14 are considered the best marksmen. By the time boys reach the age of puberty they know the rudiments of all the major economic activities. They are not, of course, expert bow or canoe makers but they know how arrows and bows are made and assist their fathers in these activities. Thus, by observation, imitation, participation, and casual instruction, boys are gradually introduced into the economic activities of the tribe.

At the age of 8 or 9, girls begin to help their mothers in processing manioc, taking care of younger children, fetching water, and spinning cotton. In one family in which the mother had died, a 10-year-old girl managed all the household activities and took care of two younger children. Girls were not observed playing any special children's games. Both boys and girls accompany the men when they are clearing new fields and burning the trees and undergrowth, or when their mothers go to dig up manioc roots and carry them to the village. Boys and girls also participate in secular dances, taking their places at the end of a line of dancers, imitating the adults to the best of their ability.

No sexual intimacies were observed between boys and girls. When asked about this matter the adults said children were too young for sex and that when they began to take interest in sex they were put into puberty seclusion. This statement is supported by the request which Tamapú made to the members of the Expedition when he left Nilo at the camp—that on no account could he have any relations with women. Actually girls and boys have little opportunity for secret meetings. When girls go to fetch water they go in groups accompanied by older women. In the village, girls are under the supervision of their mothers and other older persons. Children are warned specifically not to wander from the village bacause of the danger of being captured by enemy bands, and children speak with fear about the Shukaramâi and the Suyá.

Although prevented from having sexual relations with girls, boys are not reprimanded against playing with their genitals, and such activities are looked upon with tolerant amusement by adults. When asked about onanism, boys would grin and snicker, talk among themselves, but would not give any straightforward answer.

While questioning grown-ups about sex matters and the names of sexual parts, men and women would discuss the subject freely in the presence of children. In other words, children seemed to know everything about sex, and no attempt was made to hide even the sexual act.

The freedom and ease which characterized the relations between grown-ups and children at no time affected the obedience and respect of the children toward their elders. Mothers particularly were seen to slap boys and girls if they shirked their duties. The respect of children toward men was particularly marked. On one occasion while we were taking a stroll on the airfield at sunset, followed as usual by a group of boys, one of them began mimicking the gait of a very stout Brazilian Air Force officer who had visited the camp some days previously. One of the men said the officer in question was Fernando's father, which of course was not true, but immediately the boys stopped, turned around, and went back to camp, and even the next day they appeared shy and uncertain of our reaction.

Of all the children observed in Jacarei Camp, those of the Waurá appeared to be the most energetic. When a group of Waurá boys entered the main building they would first ask for some sugar, then they would examine anything new, even to examining one's pockets. Then they would look through magazines and newspapers. After everything in the house had exhausted their interest, they would stand around stamping out a dance rhythm with their right foot. Suddenly they would form a line and go dashing around the central table, stamping out a furious dance step. This would continue until they were told to go outside and play.

At no time were children observed quarreling or fighting, even when children of other tribes were present at camp. If one child injured another accidently he might be punished if the injury was due to carelessness. It was remarkable how few accidents took place among boys who played with bows and arrows all day. Only once did the writer see a boy shoot another accidentally. In this case the boy was punished, for he used a sharp-pointed arrow which struck the other in the foot. Lack of accidents is no doubt due to the fact that boys use the whistling arrows, which not only give a warning but have a round tucum nut shell at the point.

At the age of 8 or 9 the chief pierces the ear lobes of the boys. This is done with a fang of the dogfish, and the act of piercing the ears is known as *hakutúk*. After the ear-piercing act the parents of the boys give a ceremony during which food is passed out among the guests and the *okutúk* dance is performed. The boys now receive a new name which is used by everyone. Generally a number of boys go through the ceremony together. Small wooden plugs are kept in the hole until they heal, after which feather pendants can be worn. Boys and even young men like to wear empty 22-caliber rifle shells in their ears. No similar ceremony is performed over girls.

PUBERTY SECLUSION (AKIPEWÂT)

From what has been said we can conclude that child rearing is largely an informal process, during which the child learns everyday activities through participation. By the age of puberty children know how to perform all but the specialized tasks and have observed practically all the overt activities and physiological acts, from sexual intercourse through birth to death and burial. As we have noted, childhood is normally a period of freedom and ease, and children appear to be happy, friendly, and satisfied.

During puberty girls and boys enter upon a short period of rigorous discipline and training. They now learn to understand those things which are not observed in daily life. The girls are taught how to act during pregnancy, what medicines to prepare for abortion, how to behave toward their future husbands, and how to live a respected life in the village. Boys are taught the origin myths and stories of the doings of important men in the past, how to act in a raid, how to play the flutes, how to make bows and arrows of the best quality, and something, although by no means all, about the religious beliefs and ritual practices. The boy and the girl come to realize that life is a serious business, with hazards and pains, and that the spirits are intimately involved in the affairs of the tribesmen. In the case of boys, they learn to stand pain without flinching and to realize the importance of continence.

When a girl has her first menses she is secluded behind a reed screen near her mother's hammock, where she must remain during daylight. She must not speak or call out to anyone, and if spoken to she must answer in a low voice with downcast eyes. Her mother supplies her with food and gives her tasks to perform, such as spinning cotton or burití fiber. Whenever the mother or an older woman has time she sits in the enclosure with her and talks to her. The girl must stay in seclusion for 3 or 4 months or long enough to allow her hair to grow over her eyes. It is believed that the longer the girl remains in seclusion the better wife she will make. She arises before sunrise and, if possible unobserved, performs her physiological acts, bathes with water supplied by her mother, and then retires behind the screen. She comes out again for awhile after sunset.

When a boy reaches the age of 14 or 15 he, too, is secluded behind a reed screen. The Camayurá are not very definite about the age, saying only that when a boy begins to become interested in girls he is secluded. Like the girl, he is allowed to come out only before sunrise and after sunset and must talk in a low voice and only when spoken to. Like the girl, he is kept busy with various tasks and is instructed by his father and other old men. I spent several hours off and on behind the screen with Nilo. He was always painted with urucú and wore featherwork ear pendants. The place was littered with materials for making arrows and ornaments and a small fire burned on the floor. He was always busy making arrows, ornaments, repairing old flutes, carving seats, and weaving baskets. After dark we could hear him practicing on the flutes under the instruction of an older man. Usually his 10-year-old sister was behind the screen with him, going out once in a while to bring him food, water, or materials that he needed. In contrast to a girl, a boy may go through several seclusion periods before he is considered mature. This was Nilo's fourth period. It seems that so long as a boy does not have sexual intercourse he can be put back into seclusion for any misdemeanor or any act which his father considers a sign of immaturity. Boys, particulary, object to the restrictions of seclusion. In the evenings while we were at Tuatuarí, Nilo would sometimes sneak out back of the houses to visit us. But as soon as some grown-up would approach he would run back. We were told that it was difficult to keep boys in seclusion and that some fathers were lax in enforcing the puberty regulations.

We might say, therefore, that the special treatment accorded young individuals during puberty seclusion constituted the final phases of the process of socialization and enculturation. It seems incorrect, at least among the Camayurá, to think of this state as a rite or ceremony of passage alone. It appears to be more a period of training and education in which the young are brought into contact with the belief system of the tribe, and during which they are taught the meaning of the belief in spirits and their power over man, the meaning of tribal religious rites, and the sacred objects used in these rites. The fact that the period of seclusion was not a specified number of months but depended upon the development of the young person appears to indicate that the educational aspect is of primary importance. Camayurá society is not a differentiated society. There are no occupational, warrior, ceremonial, or shaman classes which a man could join through special training and initiation. Every man participates fully in economic activities, is a warrior if need be, is his own shaman, and a dancer in the tribal rituals. Obviously some are more expert than others, some become specialists in economic crafts, and some become flute players and skilled shamans. But every man is taught the rudiments of these skills and during his first illness a man is taught, through the smoking of tobacco, how he can get in touch with the *mama'é*. When a young man or woman comes out of puberty seclusion he or she is a mature individual equipped with the knowledge, beliefs, and values that his culture provides.

Important in the orientation of a man to the Camayurá world is the proper exercise of sex and the attitude toward pain. Continence is prescribed before important undertakings because it is believed that the *mama'é*, upon whose good will success depends, are angered by sex, for they do not like the smell of men who have had sexual relations. If a shaman, who has had sexual relations the night before, is suddenly called upon to perform, he will take an emetic to purify himself. Vomiting, as we have seen, is a recognized way of ridding one of evil or uncleanliness. Wrestlers and dancers, too, avoid sex for some days before putting on a performance.

As the pleasures of sex must be enjoyed with caution and proper regard to the attitude of the spirits, so pain must be endured unflinchingly. We have noted that scarification is sometimes inflicted upon older children as a form of punishment. To even the threat of scarification boys respond with overt signs of fear. But at puberty both boys and girls are subjected to repeated scarifications with the *yayáp*, scraper, until they can endure the pain without flinching. Tamapú refused to let me take a photograph while he was scarifying Nilo because Nilo could not yet endure it without showing pain. Thus, scarification and the avoidance of sexual relations go hand in hand. To be successful, to be a man in the Camayurá pattern, pleasure must be restricted and pain endured.

MARRIAGE (APITAHÓK)

When young men and women come out of puberty seclusion they are given new names by which they will be addressed for the remainder of their lives. They are now told to spit if they accidentally mention the names of their future in-laws. If they wish to refer to a person whose name they cannot use they must say the child of or father of so-and-so.

Marriage rules prescribe that one must marry a cross-cousin. Long before the children are mature the parents have arranged the marriages and the young people know who their future spouses are. All these arrangements, of course, depend upon the availability of young men and women in the right kinship categories.

When referring to marriage the Camayurá use the term *apitahók* which contains the words *apí*, mother's brother, and *hok*, house, and which appears to mean no more than to-go-to-the-mother's-brother's-house. Genuine Camayurá marriages, that is, marriages not involving capture or marriage outside the tribe, are solemnized during the *kwarúp* ceremony. The young people come out of puberty seclusion during this ceremony, and the young man cuts the hair of his future wife and the young woman tonsures her future husband. This act, publicly performed, unites them in marriage.

After the marriage ceremony the young husband goes to live in the house of his father-in-law. As has been pointed out before, until a child is born the marriage is considered temporary. Once a child is born, however, and all concerned are satisfied with the marriage, the husband takes his wife and child to his father's house. He is now a mature man with all the rights and responsibilities of a tribesman.

A model young man is polite and respectful to his wife's family, friendly and cooperative toward his brothers, and obedient to the decisions reached by the chief and the older men. Skill in fishing, farming, and the crafts bring him the respect and admiration of his fellows, but prestige and renown are gained through wrestling. All young men undergo training in wrestling, and out of these contests a group of outstanding wrestlers are selected who are to uphold the honor of the tribe during the intertribal ceremonies. To be an intertribal champion is the ambition of every young man, and to have once been an intertribal champion is a mark of distinction that lasts throughout a man's lifetime. Of importance, too, is the skill which a man displays in throwing spears with the spear thrower during the *yawarí* or in dodging the spears thrown by others. In gaining renown through feats of strength and skill a man is careful to observe the rules of continence, dietary regulations, and to inure himself to pain by scarification, all of which are believed to increase his strength.

A woman, too, gains respect by bringing up a number of healthy children, by being industrious, and by not having sexual relations with her husband's brothers. Quarrels and disagreements between husband and wife are usually blamed on the wife. Young women paint themselves and behave in a manner to be attractive to the men. It was amusing to observe how a naked woman after painting herself moved about with grace. She would sit down slowly on one leg, moving the other thigh over to cover her pubis, and place one hand on the ground to support herself while the other rested on her thigh; then she would straighten her back and look over herself, just as one of our women do after putting on a new dress. She would then glance around to see if people were looking at her, just as if to appraise their attitude toward her.

Every man as he grows older is expected to become a *payé,* shaman. Although every young man learns about the existence of the spirit world during puberty seclusion, he is not expected to have an experience in which he gets into contact with the *mama'é* until he becomes seriously ill. During his first illness his father or other older man who has already had experiences initiates him. They smoke together and when the father has drawn out the object which caused the illness, he can determine by this object just which *mama'é* will become the younger man's protecting spirit. They then continue smoking until the young man is able to see the *mama'é* and to hear its song. The smoking ceremony may have to be repeated many times before the young man succeeds in seeing and hearing his *mama'é*. Once he has had this experience and can chant the song, he is considered a shaman and thereafter can smoke in public.

The earlier a man gets into contact with the spirits, the better shaman he is expected to become. Some young men are said to have seen the *mama'é* without being ill or before they have smoked. This experience usually takes place during burial, and the young man sees and hears the spirits around the corpse of the dead. Such a man is highly respected and usually becomes an outstanding shaman. On the other hand, some men reach old age before they have this experience. The general attitude appeared to be one of waiting. When one began to have spells of illness, then one would sooner or later have a shamanistic experience.

A famous shaman is a man who gets into contact with many spirits, is able to call them at will by smoking, and can cure others with the help of his spirits. Only men who have come into contact with the *mama'é* that guard the important food plants and fish can dance and sing the songs of these *mama'é* during rituals. The perpetuation of the tribe, the growth of food plants and fish, and curing of the sick thus depend upon men who get into contact with the *mama'é* and can solicit their help in maintaining the life of the tribe. Great shamans are the protectors of the tribe and are accorded great respect. When asked about the outstanding men in the tribe, the Camayurá would point to men who had been great wrestlers in their youth, who had distinguished themselves in raids, and who now had become great shamans and ritual performers. These men always had a greater number of *mama'é* than the others.

BURIAL (OMONÓ)

Although the Camayurá recognize that men may die at the hands of human enemies from other tribes, and other accidents, as well as from the effects of sorcery, they still believe that death is always due to the anger of the *mama'é* who have forsaken them or who have neglected to help them. Death, *manó,* is thus a condition of evil from which the immediate relatives must be saved.

After a mature person has died, the body is washed, and painted with urucú and genipapo, the ornaments are put on, and then the corpse is sewn up in a hammock and buried in the plaza of the village. The form of burial depends upon the status of the individual. Common tribesmen, that is, those who are not of pure Camayurá descent, are laid horizontally in the bottom of the grave and then covered. The mature children of chiefs are buried in a sitting position. Men of pure Camayurá descent are buried in a vertical or standing position. The body is wrapped in a hammock, a pot is placed over the head, and then the corpse is strapped to an upright post of *camiuva* wood, placed in the grave, and covered. Outstanding chiefs are given a special burial. After a deep grave has been dug, a compartment is hollowed out on one side, two posts are driven in, and the corpse, wrapped in a hammock, is slung from the posts so that it does not touch the ground. The grave is then filled so that the corpse rests in a small compartment. Graves are generally marked out with a circle of short posts until the *kwarúp* rites, after which they are removed. It is of interest to note that the Camayurá term for grave is *ivirahók*. *Ivirát,* as we have seen, is the term for one of the three manioc *mam'é,* to which the word *hok,* house, has been added. The word "grave" thus appears to indicate manioc-spirit-house. After death the ghost goes to the abode of the dead, *karakapí,* where the ancestors dwell. The Camayurá have no fear of the dead, for they believe that ghosts never return to haunt the living.

After death the immediate relatives of the dead cut their hair, scarify their heads and arms, and wail in a loud voice and try to jump into the grave, but are prevented from doing this by the villagers. The mourning period lasts until the next *kwarúp.* The mourners are secluded behind a screen in the house and are not permitted to fish or to work in the fields. They can be heard behind the screen chanting songs in the morning and in the evening. During the period of mourning the name of the dead person cannot be used. The relatives of the dead person are released from mourning seclusion in the *kwarúp* rites at which time the chief appoints a woman to wash the heads of the mourners with water. When children under the age of puberty die the parents do not have to wait until the *kwarúp,* but are released from mourning sometime later by having their heads washed.

THE BACAIRÍ

This brief account of the Bacairí is based on field work done among the Bacairí living in the Government Indian Post on the Rio Paranatinga in June 1947. The field work was carried out in the course of a reconnaissance survey which the writer was then making of some of the central and northern Indian tribes of Mato Grosso. This and other trips at the time were made in a Ford truck put at the disposal of the writer by the Serviço de Proteção aos Indios. By using a truck the trip to the Paranatinga could be made over the Planalto do Matogrosense in 2 days in contrast to the old route along the Rio Cuiabá which, on horseback with pack oxen, takes from 2 to 3 weeks. The writer was accompanied by Fernando Altenfelder Silva of the Escola de Sociologia e Politica de São Paulo and by Rev. Thomas Young and Rev. W. L. Buckman of the South American Indian Mission. The Reverend Mr. Young, who has spent more than 10 years among the Bacairí, was of great help in selecting informants and in adding to our knowledge of the Bacairí.

According to estimates made in 1947 by the Brazilian Indian Service (Serviço de Proteção aos Indios) there are between 200 and 250 Bacairí living in the northern part of Mato Grosso State, Brazil, divided between the Indian Post of Simão Lopes on the Rio Paranatinga and the village of Rio Novo some distance to the northwest. The Bacairí claim that the whole tribe originally lived together on the Rio Paranatinga (headwaters of the Tapajoz River), but attacks by other Indians and Brazilians forced them to move about 90 years ago. Owing to a dispute the tribe split, one group moving north to settle on the banks of the Rio Kuliseu, a tributary of the Xingú River, the other moving to Rio Novo. After about 50 years in the Kuliseu Basin, this group moved to the present location of Simão Lopes, not far from the original Bacairí settlement on the Rio Paranatinga. Although the Rio Novo group has adopted Brazilian customs and manages without Government help, some have moved to Simão Lopes where the Bacairí now live on reservation lands and receive assistance from the Brazilian Government. The information presented here was obtained at Simão Lopes from the Bacairí who lived on the Rio Kuliseu and relates to the life that they lived there about 40 years ago.

Linguistically the Bacairí belong to the Carib-speaking family and appear to be closely related culturally to the other Carib-speaking tribes in the Upper Xingú Basin. The Bacairí are short in stature, broad-shouldered and well-built. The head is broad, the nose straight or acquiline, the face narrow, the lips fairly thin. In physical appearance the Bacairí remind one of the Arawak-speaking Paressí, but contrast sharply with the large-framed, coarse-featured Bororo, Umotina, and Guató living in the headwaters of the Paraguay River to the south.

The Bacairí Indians are first mentioned by Gonçalves da Fonseca in his account of his travels to the Madeira region in 1749. In the atlas of Thomas Jeffry, 1776, the "Bacahyris" are located on the Rio Paranatinga. Ayres de Casal, in 1817, refers to the "Baccahyris" as living in the region around the Rio das Mortes. Martins places them in the headwaters of the Xingú. From 1820 on, more or less permanent contact has been maintained with the Bacairí living on the Rio Novo and Rio Paranatinga. In 1820 a P. Lopez led an expedition in search for gold into the area and with him came priests who began to convert the Bacairí to Christianity. With these contacts came disease and conflicts (Von den Steinen, 1942, p. 123).

The first scientific account of the Bacairí dates from the voyage of Von den Steinen down the Xingú River in 1884. Traveling over land from Cuiabá, he and his party reached the Christianized Bacairí living in the villages of Rio Novo and Paranatinga with whose help he continued his voyage down the Batoví River where he was the first to make contact with the four pagan villages of the Bacairí located between latitudes 13°30′ and 12°30′ S.

The following table gives size and number of inhabitants of the villages visited by Von den Steinen (1942, appendix, table 8, p. 418):

	Houses	*Men*	*Women*	*Chil- dren*	*Total*
Rio Novo	6	16	19	20	55
Paranatinga	7	6	8	3	17
On Rio Batoví:					
First village	3	10	7	9	26
Second village	4	18	17	7	42
Third village	3	13	12	19	44
Fourth village	7	27	18	8	53
Total	30	90	81	66	237

By the time Max Schmidt visited the Bacairí in 1900–1901, the Bacairí settlement had diminished. On the Paranatinga he met 34 Bacairí and at Rio Novo, 60. On the Kuliseu River where Von den Steinen had visited four villages, Max Schmidt was able to find only two.

ECONOMY

SHELTER

While in the Xingú watershed the Bacairí lived in villages built on the banks of the Rio Kuliseu. A village (*utanári*) consisted of three to eight houses (*towisę́*) built in a circle around a central plaza, *taséra*. The Bacairí house was a large communal building, oblong in shape, with rounded ends and with the roof thatching reaching to the ground. These large domelike buildings were occupied by three to five families.

In the center of every village there was a ceremonial or flute house (*kadoéti*) in which the men kept their ornaments and musical instruments and in which visitors were entertained. Men, women, and children are permitted to enter the *kadoéti*. Attached to the common house there was a smaller building, usually oriented in the direction of the rising sun, in which the sacred flutes were kept. Women were not permitted to enter this house, as they were not allowed to see the sacred flutes. The villages were connected by roads running along the river bank.

EQUIPMENT

In the center of each house there was a storage space (*jiráu*) where maize, manioc meal, and other foods were kept in gourd vessels (*káiko*). Cooking was done in a small shed at the back of the house, but food was eaten indoors. Around the walls each family had its hammocks (*amáka*) in which the people slept. Other furnishings of the house consisted of mats, baskets, clay pots, wooden benches, and dishes and cups made from gourds.

As the Bacairí were extensive travelers and depended upon fish for a considerable part of their food supply, canoes were an important part of their equipment. The Bacairí canoe (*pépi*) was made from the bark of the jatobá tree. The tough, heavy bark was first stripped from one-half of the tree. Small fires were then lighted on the inside of the bark trough to make it curl. Braces were placed at intervals along the entire length, the bow was tapered, and the stern was squared off by forcing the bark upward at one end. Bacairí canoes varied in size, the larger ones being able to carry as many as 8 men. Canoes of jatobá bark are used by the Bacairí today and are the predominant type among the Indians of the Upper Xingú. The Bacairí also made large tubs out of jatobá bark which were used as settling vessels for manioc juice. The juice of the manioc contains a fine powder or starch which settles on the bottom of the vessel, to be gathered after the liquid is poured off. For gardening, the Bacairí formerly used a digging stick made of hardwood. For hunting, they used a bow (*túka*), round or slightly oval in cross section and from 2 to 2½ meters in length, made from a yellow or reddish wood which was first matured by burying it in mud. The bowstring was made from the fibers of imbauba bark. Arrows (*piréu*) were made from cane with hardwood or bone points. Hunting arrows had two feathers, but arrows used for shooting fish had serrated wooden points and no feathers. The cutting tools of the Bacairí consisted of knives made from bamboo, stone, bones, and shell. Transportation was by canoe, or if over land, goods were carried in a wicker basket supported on the back by a tump line.

ORNAMENTS

While living on the banks of the Kuliseu River, the Bacairí, in common with the other Upper Xingú River tribes, did not use clothing. Men sometimes wore a narrow cotton band (*onegín*) around the waist, with a few tassels hanging in front. Women, after puberty, wore the ulurí. Men wore their hair cut short. Women wore their hair long at the back but cut straight across over the forehead. Hair was cut with a knife made by setting sharp fish teeth into a wooden stick, and was combed with a comb (*aekáji*) made by weaving slender cane teeth into a cotton holder.

Although clothing, in the strict sense of the term, was nonexistent, the Bacairí used, on ceremonial occasions, beautiful, skillfully made ornaments. An important ornament was the *orógo*, a diadem or feather headdress strapped to the forehead. The *orógo* was made by fastening a row of green parrot feathers to a cotton band, above which was fastened another row of yellow weaver bird feathers. Two long blue macaw feathers were set in the center so as to stand straight up above the forehead. The *orógo* was worn only by men. These headdresses are still used, for some were seen in the village of Simão Lopes.

There were at least four kinds of necklaces. The *megesáuwa* was made from small thin round disks of white or pink snail shell, as many as 400 being strung on a string. This necklace was worn around the neck by women and around the waist by men and girls. The *ikwihéno* was also made from snail shell, but the disks were oblong with holes in both ends through which strings were passed. Although the *ikwihéno* was particularly used by men, women sometimes wore it together with the *megesáuwa*. The *sawalápi* was a necklace made from black disks of tucum palm nut and could be worn by both men and women at all times. Both men and women also wore necklaces made from the teeth or claws of the jaguar called the *dodojéri*. The Bacairí still use the *megesáuwa*, *ikwihéno*, and the *sawalápi*.

Besides necklaces, the Bacairí used a variety of other ornaments. The *upauwį́* were armlets and anklets of cotton material decorated with feathers of different colors. The armlets, which were about 2 inches wide, were fastened tightly above the biceps and were believed necessary for the development of the muscle, with similar bands worn below the knee and around the ankles. Both men and women used the bands. An American missionary who experimented with Bacairí arm bands claimed that they caused him a great deal of distress but he has observed no ill effects among the Indians. The *pai* was a feather ear ornament made from red toucan and yellow parrot feathers suspended from the lobes of the ears. Holes in the ears were made with a sharpened jaguar bone or with a sharpened rhea feather. The *tajikaino*, worn only by men, consisted of two blue macaw feathers placed in a hole in the septum of the nose, so that the feathers swung one on each side of the head. Although the *páiko*, or scratcher, was not strictly an ornament, it is mentioned here because it had ritual meaning. The *páiko* was made by setting fish teeth into a gourd holder and was used for scarifying the skin of the arms, legs, chest, and back so as to cause bleeding. The wounds were first washed with water and later smeared with the juice of the *mukúna* vine. The *páiko* was used by boys and girls during puberty seclusion and by adults who had sores on their bodies. It was believed that the use of the *páiko* made people strong and healthy. As far as could be ascertained the Bacairí did not mutilate the teeth, genitals, or other parts of the body. There was no sign of tattooing, but pubic hair was carefully pulled out by both men and women. Formerly the Bacairí kept large birds, believed to belong to the eagle family, in their villages for their feathers. The Brazilians call the bird "harpía" and claim that it is still kept by the Indians in the Xingú Basin. The "harpía" was captured by shooting it with a blunted arrow, and it was kept in a special hut and fed. Villages often had several of these birds in captivity, the feathers being used particularly for feathering arrows. Parrots and macaws were also kept, their feathers being used only for ceremonial decorations.

SUBSISTENCE ACTIVITIES

Vegetable foods formed the basis of Bacairí diet, with fish and meat taking second and third places. The principal animals hunted were monkeys, deer, wild pigs, tapir, and the jaguar. The jaguar, however, was not eaten, but was hunted for its skin, teeth, and claws. The principal weapon used was the bow and arrow. Hunters would stalk game alone or in groups with the aid of dogs driving game into water or into steep rocky enclosures. There is no mention of the spear being used, but deadfalls and pitfalls were used. Many varieties of large fish were shot with the bow and arrow, either from canoes or from the river bank. Lizards, turtles, and a wide variety of wild fruits, roots, tender shoots, and honey were collected at certain seasons of the year.

The major part of the food supply, however, was obtained through agriculture. The Bacairí cultivated bitter manioc, *ópa;* sweet manioc, *taisę́;*

beans, *ipié;* peanuts, *oremį́;* sweetpotatoes, *mahódo;* "cará," *návi;* maize, *ánji;* potatoes, *múla;* cotton, *kodokíra;* urucú, *áunto;* tobacco, *tauwį́;* piqui fruit, *ípa.* Manioc, maize, and sweetpotatoes were the principal food crops. Cotton was grown for making hammocks and the various belts and strings used. Tobacco leaves, after being dried, were smoked by being rolled into cigars (*tapáki*). Tobacco seems to have had a ritual use, as the shamans smoked heavily before performing a rite. Bitter manioc was shredded on a shredding board into which fish teeth or fine pieces of shell had been embedded. The pulp was squeezed in a piece of cotton cloth in order to remove the poisonous acids. The meal was then used for baking cakes. The fine powder or flour which settled at the bottom of the settling tub was also used for baking cakes after it was thoroughly dried. Maize was eaten boiled or roasted. Sweetpotatoes were roasted over coals. Maize meal was prepared and mixed with wild honey and water to make a nonalcoholic beverage. The Bacairí claim not to have used any form of alcoholic beverage.

Cultivated plots were located outside the village, each large household usually having a continuous area. Maize and many other crops were planted in September and October when the rains began. Sweet manioc and sweetpotatoes could be planted the year around, especially on river banks after the rivers went down following the rainy season. April was the harvest month and also the beginning of the ceremonial season.

ORGANIZATION OF LABOR

The occupants of the large communal houses usually worked together in the fields, went hunting or fishing together, and generally cooperated in economic activities. Families could work individually if they wished or did not need the help of others. It was the task of the men to burn and prepare the fields for planting. As the men loosened the soil with the digging stick women planted the seeds, slips, or pieces of stalk, as the case might be. Women and children thereafter took care of the weeding.

Division of labor by sex existed to a certain extent. Women wove mats (*anegéu*) out of various fibers, and hammocks out of cotton yarn which was also spun by women. Men wove baskets. Both men and women made clay pots. Bacairí pots are quite distinct from the pottery of the Indians living on the Upper Paraguay River. Bacairí pots are flat-bottomed and have straight vertical walls with everted rims. The pots in common use were, and still are, black in color, unglazed, and undecorated. Some of the pots seen were made in the forms of frogs, turtles, fish, and birds. The Bacairí claim that they formerly had decorated pottery called *amúga,* painted with black, gray, red, and brown designs.

The Bacairí also had economic activities in which the whole village, or a number of communal houses, participated. The *kometé,* or collective land clearing, was one of these. A man would invite a large number of relatives and friends to assist him in clearing a new piece of forest land. The women would participate by preparing large amounts of food and honey beverage for the workers. The new field would remain the property of the man who initiated the *kometé,* obligating him to work in return if called upon, but sometimes the group of men who cleared the field would divide it among them.

House building was always an enterprise in which the whole village took part. The group that was interested in raising the house cut the beams and poles necessary for the framework and prepared large quantities of food. While a certain number of men began to put up the framework, others went to gather grass for thatching. When they returned with the thatching they put on their ceremonial decorations and danced the *mahulawári* dance. House building was thus not only an economic act but also a ceremonial occasion.

Hammock weaving was, at times, a collective enterprise. A woman with a larger than usual cotton crop distributed cotton among her friends and when the work was completed she organized a feast and dance.

Ceremonial trading expeditions (*tulíki*) were organized by the chief of the village. During the rainy seasons, when the rivers were high and canoe travel easy, the men of a village would collect whatever excess goods they had, such as bows, baskets, ornaments, hammocks, and even food, and would go to a neighboring village where the chief would receive them before the ceremonial house. The two chiefs would then supervise the exchange of commodities. After the trading was over the chiefs organized wrestling matches between teams of the two villages. Before the visitors left, a feast (*tuláki*, swallow feast) was given in their honor. The motives for these trading expeditions were both economic and ceremonial. They were organized by a chief when the villagers actually required certain economic goods, but even when there was no economic need, goods were exchanged and the men of the two villages participated in wrestling, dancing, and feasting.

SOCIAL ORGANIZATION

The Bacairí claim not to have been a warlike people. They defended themselves if attacked, but say that they did not attack others. Each village had a chief (*píma*) who was assisted by an *itáida*. There was no chief for the whole tribe. The *itáida*, who was a young man, was selected by the chief with the consent of the villagers. The *itáida* could be the son of the chief but this is not a requirement, for any able young man was eligible for this position. At the death of the chief the *itáida* succeeded him.

The principal functions of the chief were economic, judicial, and ceremonial. As we have seen, the chief organized trading expeditions and participated in such activities as collective planting and house building. He also represented the people of his village when visitors arrived or when his own village made formal visits. If the village feared attack the *píma* selected a particularly brave man to lead the defense or to undertake retaliation. Discussions concerning disputes and other village affairs took place in the ceremonial house. Murderers were exiled or if a war was on the murderer was made to bear the brunt of the attack. Thieves, adulterers, and others who persisted in disturbing the peace and harmony of the village were exiled through the common action of the villagers. Exile was considered severe punishment, for the Bacairí say that individuals who were exiled often committed suicide. Chiefs among the Bacairí, therefore, were not war leaders, nor was succession governed by descent. Chiefs seem, thus, to have been primarily leaders of social activities. The part which a chief played in ceremonial life will be described later.

There appears to be no evidence that the Bacairí had clans or moieties. The kinship nomenclature is of the bifurcate merging type with parallel kin merged with lineal kin and with separate terms for mother's brother and father's sister and for cross cousins. (See chart 3.) The kinship terms in ego's generation and in the children's generation are distinct for men and women. Beyond the bar prohibiting marriage between anyone called brother, sister, parent, or child, there were no special rules governing marriage. Cross-cousin marriage was common but not preferred. There were no residence rules or avoidances of the mother-in-law or father-in-law. As the Bacairí lived in large communal houses, marriages often took place between young people brought up in the same house. After marriage they would take over a section of the house as their private quarters. The Bacairí say that families could move to another house with the consent of the house elder. Although polygyny was permissible marriages were generally monogamous. The father and the father's brother had great authority and were highly respected. Younger brothers were not permitted to joke or play rough with their eldest brother. The mother's brother and father's sister were also respected but less than the eldest brother. The relationship between brothers and sisters was one of great respect, the informant saying that incest was unthinkable.

THE LIFE CYCLE

BIRTH (ERASÉLLI)

Pregnancy (*enokúa*) was recognized as being caused by sexual intercourse. In advanced pregnancy a woman was not permitted to eat the flesh of such large animals as deer, capybara, or tapir. When the time of delivery drew near a portion of the house was screened off, where the woman gave birth and remained secluded until the normal menses began. The expectant mother was assisted by her mother and other female relatives, a shaman being called only in cases of difficult birth.

A woman gave birth in a squatting position, the midwife holding her under the arms and gently pressing her stomach. Sometimes the stomach and back of the woman were bathed with poultices made from boiled cotton leaves. It was the duty of the woman's mother to cut the umbilical cord with a bamboo sliver. The placenta was wrapped in a piece of cotton cloth and buried because it was believed that if it were picked at by birds it would cause sickness and misfortune to the mother and child. The child was then washed, wrapped, and given to the mother. Later it was given the name of one of its ancestors.

During the seclusion period the mother and child were believed to be in a state of ritual danger (*wanki*). They were not permitted to go out in daylight and had to be fed and cared for by the female relatives. The first menses released the mother and child from seclusion, this release being known as *tadaunúto*. Shortly afterward the father invited the villagers to a ceremony (*itabienli*) during which the *nokigóra* and *tadánwa* flutes were played and only the women danced. By means of this ceremony the mother was reintegrated into the life of the family and the village.

After 3 years of age both boys and girls began to copy their elders, the boys playing with bows and arrows and the girls with spindles. By the time the boys and girls reached puberty they knew how to perform most adult activities.

PUBERTY RITES

When the girls had their first menses and the boys reached the age of 13 or 14, they had to go into seclusion (*posegéiro*) for a period of 2 months to a year. It was believed that the longer the young people stayed in seclusion the stronger they would become physically. The longer periods of seclusion were also believed to enhance the prestige of the family. The boys and girls were not permitted to come out in daylight, and were fed and cared for by their parents. While the boys and girls were in seclusion they made pots and baskets for family use.

With boys the seclusion was inaugurated by an ear-piercing ceremony. A number of men with sons of about the same age would perform this rite collectively before invited guests. After eating and drinking, the *poinwáto* song and dance were performed. The boys were now in a state of *wánki*, ritual danger, and were secluded immediately after this rite. The girls' ears were pierced when they were babies, but the ear piercing of the boys corresponded to the period of the first menses of the girls.

The release from seclusion was signalized by the feast of *tadaunúto*. The parents of the young people accumulated much food and went on a big hunt on the day before the feast. The chief and all the villagers were invited to the ceremony during which all the Bacairí songs and dances were performed and the young people were presented gifts by the villagers. The girls would now take the strings of beads from around their waists and wear them around their necks and their mothers would give them cotton cords which they put around their hips and to which the ulurí were attached. The boys and girls were now eligible for marriage.

MARRIAGE (TODOHOKŨINLE)

Marriages were arranged by parents or by older brothers or sisters. The father and mother of the boy, for instance, would take presents of ornaments and food to the parents of the girl. If the parents of the girl accepted the gifts it meant that they favored the marriage, and if they refused it meant that the suitor was not acceptable. The marriage ceremony took place in the girl's home, the date being arranged by the parents. At the girl's house the young couple were seated side by side with linked arms. They were then given advice by their respective parents and relatives. Marriage was not considered a period of ritual danger, nor were extensive feasts given. It appears to have been an affair involving only the families of the young couple.

BURIAL (EPIODÎLE)

The body was painted, ornaments were put on, and then the body was wrapped in a hammock and buried in a grave with the feet to the east so that the face would be toward the rising sun Although old and worn objects were burnt, most of the property of the dead was shared among the relatives. The part of the house occupied by the dead person was washed, and clean sand was sprinkled on the floor. There was a mourning period (*logúno*) of 1 month, during which the immediate relatives were in a state of *wánki*.

SHAMANISM

When a person died, the ghost (*kadópe*) went into the sky or into the water or sometimes wandered upon the earth. Ghosts of the dead often came back to the village to play tricks on people. The Bacairí did not believe that the ghosts of the dead caused death and, therefore, were not afraid of them. They were, however, afraid of certain evil spirits—for instance, *eradupíra*, who caused death and sickness.

To become a shaman (*piáji*), a young unmarried man would train with an old shaman for a period of 6 months to a year. During this period sexual intercourse was forbidden, fasts were periodically observed, and the novice had to abstain from eating meat. Much of the training took place in the woods, where the old shaman would teach the novice the curative properties of roots and herbs and, also, how to get in touch with the ghosts of dead shamans. The training would be complete when the novice acquired his own spirit helper, which was always the ghost of a dead shaman. Sometimes the revelation was so powerful that the young novice would fall to the ground in a trance. The spirit that then appeared to him instructed him how to make a flute (either *emíni* or *kanagéra*), which he kept in the sacred flute house, and gave him a special tune by which he could always call his spirit helper. The novice had then to prove himself by curing some sick person or by finding lost property. If he were successful he became a recognized shaman.

Before beginning a performance, shamans always fasted for several days and smoked heavily. In curing a sick person the shaman asked his spirit helper for instructions which usually were explanations of how to remove objects from the body which caused the illness. Besides removing objects from the body the shamans prepared medicines. Headaches and pains in the body were cured by juice of the *peméira* tuber, and *turógi* leaves were used for pains in the chest. For healing the wounds made by the scratcher the juice made by boiling the *kumatáni* plant was used. The Bacairí also prepared aphrodisiacs from the *katáino* plant and by mixing piqui nuts, honey, and turtle eggs.

GAMES

The Bacairí played, and still play, a form of Indian football called *toinyaméli*. The ball (*toin*) was made by covering a round gourd with native rubber, leaving a small opening. The gourd was then crushed, the pieces were taken out through the hole, air was blown into the ball, and the hole was covered over with rubber. The balls varied in size from 3 to 8 inches in diameter. The game was played on a field about 50 yards square with four goals placed midway on each of the four sides. Small white circles (*shipíri*) marked the goals, and another circle about a yard in diameter (*yotári*) was placed in the center of the field.

The game was played by two teams with equal but varying numbers on each side. One team, called *piáto*, had the north and east goals, and the other team, called *tosáundo*, had the south and west goals. To score a point a team had to put the ball across the opponent's goal. The ball could not be carried in the hand but could be kicked over the goalkeeper. Each side had a leader who did not play but encouraged his players. The organizer of the game threw the ball from the center of the field to the *piáto* side at the beginning of the game or when the ball went out of bounds. The game lasted until the players were tired, the winners being the team with the greater number of points.

The Bacairí also organized wrestling matches called *tadáinpudíli*. The object of the match was to knock down the opponent by pushing or hitting with the shoulders; grasping or hitting with the hands was not allowed. The loser was the one who had the greater number of falls.

CEREMONIALISM

Among the Bacairí ceremonialism was highly developed. Although songs and dances were performed whenever the people had an abundance of food and economic activities permitted the leisure time, there were special occasions (the ripening of corn, ear piercing of boys preparatory to going into seclusion, the coming out of seclusion of a woman after childbirth, house building, the distribution of cotton by women) during which particular songs and dances had to be performed. At these times it was customary to invite people from neighboring villages to participate in the festivities.

The musical instruments of the Bacairí consisted of rattles and flutes. The drum does not appear to have been used. Rattles were of two kinds: the common gourd rattle (*páko*) and piqui nut hulls tied together and fastened to the ankles of the dancers. There were at least four kinds of flutes. The *emíni* flute was made from two pieces of soft sapling hollowed out and fastened together with wax and string. This flute was about 3 feet long with four finger holes and a separate mouthpiece. The *kanagéra* flute was made like the *emíni* but was shorter and had a different sound. Both the *emíni* and the *kanagéra* were sacred flutes of the shamans and were always kept in the sacred flute house connected to the *kadoéti* where they were played only at night so as to prevent women from seeing them. If a woman were to see one of these flutes, misfortune would befall her. When the sacred flutes were played there was dancing but no singing. The *tadánwa* was a bamboo flute made in five different lengths without finger holes and was not sacred. The *nokigóra* was made by fastening four short tubes of bamboo of different lengths together. It was played in pairs, one player answering the other. This flute was not sacred and could be accompanied by singing. In addition to the rattles and flutes, the Bacairí used highly decorated sticks or batons called *kadóapurí* in some of their dances.

Besides the flutes and the dances performed to their tunes, the Bacairí had songs and their corresponding dances which were not always accompanied by flute music; for instance, the *oríko* was a song and a dance performed with the decorated batons which could be performed at any time; the *pahoewáto*, another general song and dance which also could be performed at any time; the *yawaisári*, the corn song and dance in which neither the flutes nor batons were used; the *mahulawári*, performed during the house building ceremony without batons or flutes; and the *poinwáto*, sung and danced during the boys' ear piercing ceremony.

One of the most important ceremonial events of the year was the annual corn dance (*anjéint-abienli*), which was performed when the corn ripened in the fields. The man who had the largest corn crop was the organizer of the ceremony. In order to have enough corn, the Bacairí usually planted special fields, the yields of which were used on this occasion. On the day before the corn gathering all the men went on a big hunt in order to have large quantities of meat ready for the feast. Early in the morning of the following day everyone went out to the fields to gather the ceremonial corn. Later in the day the women prepared large quantities of corn porridge and roasted ears.

On the morning of the third day the actual ceremony began in front of the *kadoéti*. The organizer of the dance distributed roasted ears or pieces of ears to all the villagers, children included. Then at a signal from the leader, the villagers began throwing the roasted corn in all directions and at one another. After the roasted corn was disposed of, the people ate the corn porridge and meat prepared on the preceding day. They then washed themselves in the river and put on their paint and ornaments. When the villagers had again gathered before the *kadoéti* the dance leader took a piece of corn husk and went from man to man asking for a song leader. The man who took the offered corn husk then began the *yawaisári*, or song in praise of corn. Little by little the others joined in the singing and eventually began to dance. The words of the song told how corn came to the Bacairí and how it made the people strong and healthy.

The *ransegéro*, or ear-piercing ceremony, was performed just before a boy went into puberty seclusion. It was customary for men who had sons of about the same age to cooperate in getting large quantities of food ready for the feast. After the feast was over the ears of the boys were pierced and the *poinwáto* song was sung. When boys and girls came out of seclusion there was another ceremony during which all the songs and dances were performed with the exception of the sacred flute tunes.

The *mahulawári* was performed during cooperative house building in which the whole village participated. While the women prepared food and some men were putting up the frame, a certain number of men went in search of palm fronds for thatching. When these men returned with the palm fronds they danced and sang before the new house with their loads on their backs and in full ceremonial regalia.

The custom of distributing cotton by a woman with a good cotton crop and having other women weave hammocks for her has already been mentioned. When the women had completed their weaving and returned the hammocks to the donor of the cotton, she gave a feast during which the women sang and danced the *yamaikúma*. This dance was given at night accompanied by flute playing.

When a woman came out of seclusion after the birth of a child the women of the village danced to the tunes of the *tadánwa* and *nokigóra* flutes.

ORIGIN MYTHS

Although the Bacairí have many myths, only two were obtained. One of these is the *yamadílli*, or the origin of day: In the beginning it was so dark and cold in the world that the people had to cover their bodies with grease to keep warm. The people wanted the sun to come out, so they put on their ornaments and painted their bodies and began to pray to *orimóto*, the great spirit who lived in the north. The Bacairí believed that *orimóto* was not an Indian but just a man who lived in a stone house with some of the animals which he had created. The people continued praying to *orimóto* and when light finally came the people were old and the children had grown up.

Yawétihadúho, or "those who died in the fire," is a story which tells about the origin of cultivated plants and the *yawaisári*, or corn dance: Once long ago there were a number of boys who were in puberty seclusion. At that time there were no cultivated plants, the people living by hunting and collecting wild plant foods. The boys were kept in seclusion so long and had so little to eat that they became very tired. One day when the relatives of the boys went out to collect food the boys all committed suicide. When the relatives returned and found the boys dead they were sorry and angry with themselves for neglecting them. They built a large fire and after dancing around the fire naked they jumped into the flames and were burned to death. The leader of this act was *yawíti*. Later the soul of *yawíti* returned and spoke through one of the living Indians. He explained to the Indians how to grow corn and other food crops and how to perform the corn dance. After that the corn dance (*yawaisári*) has always been performed.

As the Bacairí formerly lived in association with the other Upper Xingú tribes, it is perhaps useful to compare their following origin myths as gathered by Von den Steinen with those of the Camayurá. There appears to be a close resemblance between *Kamuschiní* of the Bacairí and Mavutsiné of the Camayurá. Both are original personages. It is also interesting to note that the Bacairí myth speaks of a time when there was maize but no manioc. Camayurá legends speak of the origin of manioc only. All the tribes are made from uba cane. The Camayurá, as we noted, were made by Mavutsiné from *camiuva* wood.

The Parents of Keri and Kame. The first part of this legend takes place in heaven. At that time there was almost everything that there is on earth today. They tell nothing of their own creation, they narrate only how it is that the heroes Keri and Kame obtain of other personages a part of the useful and important things. The Bakairí always existed, even if "in the beginning there were only a few." There were also other people that were not Bakairí, chiefly the different jaguar tribes and their relatives, who killed and ate many Bakairí. Kamuschiní, with whom the story begins, also was "of another people."

Kamuschiní went into the forest in search of tucum palm leaves to make bowstrings, where he met the jaguar Oka, whom he feared very much, and promised to get him some women if he were spared. First he felled red wood trees (*sewéti*), took the logs home, put them in a maize mortar, blew on them, and went away for a little while. But when he returned all the logs had turned into men who were busy making arrows. He killed them and went to fell five or six trees of another species which he handled as he had the other ones.

Returning, after a short absence, he saw that this time the trees had turned into women. They all called him "papa" and—with the exception of the last two, who, remaining seated without moving, infuriated him and he killed them immediately [43]—were busily grinding maize—"they say that at that time there was no manioc"—to make beijús and drinks. Kamuschiní gave the two eldest ones, Nimagakaniro and Ichoge, to the jaguar Oka, who took them home. On the way, however, Ichoge, climbing a burity palm for nuts, fell to the ground and died.

Nimagakaniro swallowed two Bakairí finger bones, which were spread around the house in great numbers as Oka used them to make arrowheads with which he killed many Bakairí, whose flesh he ate. It was due to these bones, only these, not Oka, which made her pregnant. Now, however, destiny threatened her in the person of her mother-in-law, Mero. Her husband is not known and besides Oka she had two other jaguar sons, Kuára and Zuapányua. One day Mero visited her daughter-in-law while Oka was out hunting; "she did not want him to have sons by a Bakairí woman," because she hated and ate them. With her claws she tore out Nimagakaniro's eyes and went away. Nimagakaniro died, but uncle Kuára—a jaguar, who in heaven practices the "Caesarian operation" on a dead woman—opened her womb and took out the twins Keri and Kame whom he put in a calabash like young parrots. Then he and his men cut Nimagakaniro into pieces, roasted and ate her. When Oka came home, they offered him the leftovers which he ate unsuspectingly. After he heard what had happened, Oka became very angry and ran to kill Mero but desisted when she said "I am your mother." A jaguar foster father raised Keri and Kame; he let them ride on his back and taught them to shoot with arrows. One day they asked him about their mother; he had not told them about her death because he was ashamed to have eaten of her flesh, and even then he did not tell them. However, their grandmother, or Aunt Ewaki, who belonged to the Bakairí race, and who is mentioned here for the first time, told the two about Mero's crime. Keri and Kame went and killed Mero although she received them kindly, greeting them, "Oh, my grandsons."

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[43] I obtained the names of five women: Nimagakaniro, Atanumagale, Ichoge, Koyaka, and Tawaguri. In my Bakairí grammar, p. 226, I erroneously wrote that Kamuschiní felled five piqui trees and committed the injustice of attributing to him a mistake. The name Ichoge contains *ipó* piqui (*ixó - ge*, with pique). Tawaguri also is the name of a tree, of which the two lazy ones were made, in Portuguese it is called "olho de Boi" (bull's eye). Koyaka (koyá-ke, with koyá?) grew out of a tree with rough bark and yellow fruit. About Atanumagale's tree origin Antonio could give no further information. Both she and Koyaka were also wives and mothers of jaguars, although this information is given as uncertain. Later on Atanumagale is designated as the wife of Kuára, Mero's son.

"Damned Mero (Antonio hated her with all his heart) was not buried, oh, no, she was burned." Keri and Kame made a stake, lighted it, then they dug a hole from where they could watch. Mero burned *bopopopo* . . . The fire can still be seen today in the big Magalhães cloud. At that time Keri and Kame did not yet have human form. Kame was curious and crawled out of his hole and caught on fire. He burned and died. Keri blew on him and made him a nose and hands and feet as men have. But Keri too caught on fire (the small Magalhães cloud is the fire of Keri and Kame), burned and died. Kame blew on him making life return to him and gave him a human form. Then there came three animals which can still be seen in the sky, the small otter which took Keri and Kame's tails, the big otter (ariranha) who took their hands and feet, and the toucan took their beaks. Keri's beak was bigger than Kame's.

Now the two appeared in human form and began, shortly, their activities in benefit of the living. But then what did Kamuschiní, Mero and Oka look like? "Oka is the spotted jaguar?" "Yes." "And he shot with arrows?" "Yes, then the Jaguar shot with arrows." "He shot the Bakairí and ate them." Mero had some resemblance to the jaó (*Crypturus noctivagus*) and the macuco (*Tinamus brasiliensis*), two gallinaceous birds. But her claws were as big as thumbs. "Then the mother of the jaguars was a bird?" "Yes, they say that even today the jaguars will not eat jaó nor macuco." This again is a typical Indian reason for an absurd relationship between the jaguar and the wild forest hens. Should there be a historical reason it is inseparably amalgamated with the zoological one. "Mero ate so many Bakairí, that hardly any were left. Keri had to make new ones."

Kamuschiní is also connected with animal life and although we can conceive his story in heaven we need an even greater imagination to understand it. He "is black, has sparse hair, and makes threads like a spider." "Spiders come every year in July and breed; in August and September, when the rains come, they make threads and go up to heaven leaving the thread hanging down behind them."

Keri and Kame now have human forms. Now also they avenge the death of their mother on their foster father. But they do not dare do it and want others to do it for them. They ask the jaguar to make arrows for them. The two brothers put these upright in the ground in a circle and blow on them. "Thus came" the Kayabí, neighbors of the Paranatinga Bakairí, who, so we are told, lived in peace with one another in former times but became deadly enemies because of stone axes and women. The arrows, which the jaguar made for Keri and Kame and to which by magic, they added the Kayabí; were stems of burity leaves, for at that time Keri and Kame were still children and used children's arrows. Keri told the Kayabí to shoot Oka but they missed him. In view of this, Keri resolved to shoot him; the arrow went into the jaguar's knee, "the jaguar jumped into the water and escaped." The myth then says simply that "then they killed their father," but Antonio added "if the jaguar had been killed there would not be any today."

The Sun. Then, Ewaki, the aunt of Keri and Kame, ordered them to get the sun, who was kept by the red urubú or urubú-rei (vulture.) Everything that was told up to now took place during the night before the urubú-rei came. In the zenith there was a red hole which belonged to the urubús. Because it was a dark night, the tapir, which can be seen in the Milky Way, fell into the hole. Keri saw the tapir and went in as his paw.[44] Kame, however, went in as a small yellow singing bird, which resembles the bemteví, and sat on a branch from where he would be able to inform Keri, who could not see, of all that happened. The red urubú opened the sun, it became light and the urubús discovered the tapir. All the urubús, black ones and white ones—only the red one still stayed at a distance—attacked the tapir. They brought cipó cords, with which, after much work, they pulled him out of the hole. Then they wanted to cut him up. At that moment, Kame, who saw everything from his branch, sang "nem, nem, nem". Keri blew and the urubús could not open the tapir with their beaks. They asked the urubú-rei to help them. When he came near Kame stopped saying "nem, nem, nem". The urubú-rei opened the tapir with his beak but at that moment Keri attacked him and held him so firmly that he nearly killed him. Keri told him he would let him live if he would give up the sun. Then the urubú-rei sent his brother, the white urubú, to bring the sun. The white urubú returned, bringing the red of the sunset. "Is this right," Kame asked Keri who had to hold the urubú-rei. "No, it was not the red of the sunset that I asked for," replied Keri. Then the white urubú brought the moon. "Is this right?" asked Kame. "Of course not!" replied Keri. Then the white urubú brought the sun and when Kame asked again "Is this right?" Keri responded "Now it is." Then Keri let go the red urubú who was furious.

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[44] Old Caetano told me that Keri made the tapir of *áka*, a wood as soft a manioc, and then he made small flies which caused the tapir to smell bad so that the urubú would be attracted.

At that time the moon was made of japú feathers, the sun of toucan and red arara feathers and the red of the sunset of toucan feathers. This was what the ancient ones were taught. If it is different now, as you say, I know nothing about it, nor does anyone else. Then someone had to blow in order to make the sun turn to fire.

Keri thought for a long time about what he should do with the sun and the moon. It was always day. Ewaki, also, could not tell him what to do. At last he made a big pot and put it over them. Then it was dark. Keri gave the moon to Kame. When he took away the pot it was day. . . .

Sleep and Burity Hammocks. I do not know if the necessity to sleep manifested itself with the long continuation of clear irradiation by the sun when it was still uncovered, but in any case Keri and Kame wanted badly to sleep, but they did not know how. Discontented, they went to find Ewaki, their always well-informed aunt, who told them where they could find sleep. Po, the lizard, owned sleep. He received Keri and Kame kindly and said, "Oh, my grandsons." They stayed at his house and lay in a hammock of burity and slept. When they awoke, they felt better. The next morning they said goodby and went away taking the hammock which the lizard had given them.[45] On the road, after they had walked a league, they wanted to try to sleep. They lay down in the hammock but were not able to sleep. They tried and tried in vain. They returned then to the lizard's house, they caught him and pulled out his eyelids, of which they took a very large piece. The lizard became very angry but Keri and Kame now had eyelids and were able to sleep.

Exchange of Heaven and Earth. It was also at that time that Keri left the heaven. "At first the earth was heaven; here, where we are now, the Bakairí were not born. The heaven has a floor, the same as the earth. Heaven and earth are very close to one another; from there one can cross over to here." Keri said to heaven, "You should not stay here. My people die here. And you want to stay here? You are good. But I do not want my people to die." Heaven responded, "I want to stay here." Keri said then, "Then I move." He went with all the people to the earth and the heaven went there where it is now, and where today one is able to see that everything happened as the Bakairí say.

Fire. Keri and Kame went to Ewaki who sent them to go and get fire. The fox owned the fire. He had it in his eyes where it gave a leap when he wanted to light a fire. The fox (*Canis vetulus* "catches crayfish and crabs," Brehm *Saugeterie II* S. 57) had put out a bow-net to catch fish. Keri and Kame went there and found in the bow-net a "jejum" fish and a snail. Keri entered the "jejum" (a smooth lake fish about 4 inches long) and Kame entered the shell. "Each was well hidden in his animal." The fox came, singing, and made a fire. Then he went to see what was in the net and took the fish and the shell putting them on the fire to roast. But the two brothers poured water on the fire. Furious, the fox picked up the snail, but it jumped into the river and brought more water, poured it on the fire almost extinguishing it. The fox caught him again and wanted to cut him into pieces on a piece of wood, but the snail escaped to the other side. With this, the fox lost patience, and went away very angry. Keri and Kame blew on the almost extinct fire and took it to Ewaki.

Rivers. Ewaki sent the two boys to get some water. They wandered about for 3 days. There they found three pots which belonged to Ochobi, a watersnake. There was water in the pots; two of them contained good water, but the third, bad water, which one could not drink without dying. They did not touch this third pot, because they only wanted good water. They broke the other two pots, the water which flowed from one was the Paranatinga, and of the other, the Ronuro and Kuliseu.[46] Keri took care of the Paranatinga, and Kame of the Ronuro. Both rivers continued to flow and Keri and Kame ran each after his river; they each called to the other, so that they would not get lost. Suddenly Kame's voice could no longer be heard. Keri shouted and shouted, but no answer came. Then he made the Paranatinga stand still and wait, and went to the Ronuro. Silly Kame had chosen the worse river, and could not master it, the water had spread and grown and Kame was drowned. An enormous jahú fish swallowed him. Keri came and found the Ronuro standing still, Kame having disappeared. At once he began to fish, he caught three jahús, one of which was swollen. He opened his belly and saw Kame, who was dead. He laid the corpse on big green leaves and blew on it. Kame got up and said "I slept very well." "No" exclaimed Keri, "You certainly did not sleep. A jahú devoured you." They were bored with the Ronuro and so Keri called a duck and told her to lead the water on. Thus the duck conducted the river farther on and the two boys—who, then, were about 8 years old, as Antonio ascertained, comparing them with the son of a German whom we had met in Cuiabá—returned to the Paranatinga, which was patiently waiting. Keri said, "This is the water which we shall take along."

For three days they walked on with the river toward the valley. Then they came to the fall of the Paranatinga, which was not yet a waterfall but only a dry rock. They took the water up to the falls and then let it wait on the other side. As they wanted to stay where they were, Keri called ducks and pigeons and other birds, which took the water forward.

House, Fishing, Ceremonial Dances, Tribes. The reason why they stayed at the waterfall was because Tumehi or Tumeng, a grandfather of Keri, lived there. He was the husband of the grandmother, or as we have called her up to now Aunt Ewaki (mother and aunt, great-aunt and grandmother have the same value in kinship relationships). Tumehi was a bat and had a gray-black skin. Old Caetano referred to him sometimes as Semimo (Bak. *semimo* morcego) and sometimes as King of the Congo. The latter expression the old man had heard from the fugitive slaves or farm workers and applied it to the black Tumehi. Tumehi belongs to the oldest kinship group just as Kamuschiní, Mero and Ewaki and probably his real name is Semimo, since *tumehi* and *tumeng* are adjectives. Before the water reached the falls, this was his stone house; it is not astonishing that the bat should be considered the builder of clefts, as it prefers these clefts for its "habitat" and that these with one or the other outstanding rock above them be considered a house. Tumehi was also a mason.

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[45] Another time I was told that before there were hammocks, people slept standing up, leaning against trees. Protection against snakes and malignant insects is really one of the greatest advantages of the hammock.

[46] In the myth, only the Ronuro is mentioned, but Antonio added "that was the water of the Kuliseu River."

Keri and Kame asked Tumehi to build a stone house for each of them. Tumehi, in order to obtain stones, blew on termites: it was thus that stones originated.

They also learned other things from Tumehi at the waterfall. The grandfather, rich in knowledge, showed them how to make and lay out bow-nets and how to catch fish, matrinchã, in them. He taught them, also, how to make a grill to roast the fish.

Keri and Kame had now come so far that they might be taken for adult men, they had obtained everything they needed: the sun and the moon, the hammock and sleep, the fire, the best river with a waterfall and fish, houses and fireplaces. Their life had started in heaven and is told up to the time when the real history of the tribe begins in the oldest Bakairí settlement near the Paranatinga Falls.

The Bakairí lived with Keri: his house was on the east side of the falls. They made a hill on the western side from where they could overlook the whole area. First, Kame built a ceremonial hut and a flute. He invited Keri and his people. Everyone danced to the tune of the flute, stamping with their feet and shaking their arms in response to the music, marching from their houses to the flute house and back again. Kame offered his guests pogu and beijús. In exchange they gave him arrows and cotton thread.

After this, Keri also called his people together for a dance; they danced and drank pogu in the afternoon in the big square, which still can be seen near the falls; then they made garments of burity, makanari and imiga, shook their rattles and played the flute. Now Keri, too, could invite Kame and his people. Many of them came and Keri was the owner of the imeo dance, which lasts two days and nights, refreshing themselves in the morning with a bath in the river.

But because of the people the brothers began to fight during the dance. Keri had made many Bakairí of ubá cane, whereas Kame had made none. Keri blamed him for his laziness; they quarreled and Kame, the weaker one, fled. He escaped to the southwest, made a hill at the Beijaflor River, a left tributary of the Paranatinga, and there he made the tribes: Apiaká, Paressí, and Guaná. It is very interesting to note that the Guaná are also mentioned here, being a widely spread tribe, from Paraguay, of whose existence, in this part of the country nobody had heard; a very, very long time ago, they also lived along the Beijaflor River.

Keri climbed a hill at the Paranatinga and from there he could see the smoke far away. He went to visit Kame and there found many, many people. He scolded Kame, furiously, "Why did you make so many people?" Once again they began to quarrel, but Kame abandoned the Paressí with whom he was living, and returned with Keri to the falls. Within a short time a new misunderstanding arose because of the people. Keri had made more, and Kame escaped, but this time to the Arinos. Keri looked for him, found him and brought him back again to the Paranatinga Falls. It seems that these fights and wanderings are narrated to give both of them the possibility to create a number of different tribes, which live at great distances. Keri created the Bakairí, Kayabí, Bororó, Nahuquá and Mehinakú; and Kame the Apiaká, Paressí, Guaná, Maué, Suyá, Mundurukú, and all "Arinos tribes." I have already given consideration to the fact that all eastern tribes may be assigned to Keri and all western ones to Kame (. . .) and mentioned that there exists a difference between sun-east and moon-west and that Keri, although his name in Arawak means moon, really should be taken as chief of the eastern tribes (. . .) as the Bakairí hero with his moon name, which he received from Arawak women, naturally would be the owner of the sun-east, for the Bakairí. All tribes were made out of reeds, of which arrows are made, and the Portuguese of a dark kind of the color of a gun stock. In the first place, Keri, of course, gave the gun to the Bakairí, but they did not know how to handle it, one shot past another person's ear. They were so scared of shooting as "we saw among the people on the Kuliseu." Then Keri gave the gun to the Caraibas.

Parting of Keri and Kame. Keri and Kame leave the falls and Keri names Arimoto chief of the remaining Bakairí. Arimoto was also born at the Falls. This chief abused his position and killed many Bakairí. "Was he not himself a Bakairí?" I asked. "Probably but he was a vile scoundrel. Had he been good, his descendants would still be the chiefs of the Bakairí." This time Keri and Kame went to the Kuliseu. The Bakairí, in great need, followed them and accused Arimoto. Keri and Kame returned at once, killed the traitor who defended himself violently and tried to kill Keri.

This is the end of the deeds of Keri and Kame, according to the principal myth. They left the Bakairí with many matrinchãs and went up the hill, from where they once more answered the wildly crying Bakairí and then "went along the trail. No one knows where they went. The ancient ones did not know where they had gone. Today we know much less where they went."

Even though the myth has such a tragic ending, the people had their own opinion about it. Tumehi—not to forget the old bat—left together with Keri. What happened to Kame? "He was always together with Keri. Perhaps he is dead now." And Keri? The divine ancient Caetano, who could adjust himself excellently to new conditions, declared that Keri was the Emperor in Rio de Janeiro, D. Pedro II. The good Bakairí patiently answered all my innumerable questions, because I had told them that I had to report everything to the emperor. And this was of great importance to them. I inquired "and what if the emperor in Rio de Janeiro should die?" "If the emperor die, then all Bakairí will die too." was the answer, which fortunately, in the meantime, proved to be wrong.

Chief Felipe gave me a different account. "Keri went with a hundred men to the Ronuro and Kuliseu. He sailed down the river into the ocean. This the people at the Batoví also say."

Antonio believed in the text of the myths as he had learned it from his mother. But in a different context he maintained that Keri lived in heaven, his house being there where the sun rose. "Is Keri the god about whom the Portuguese told you?" "No, that is somebody else, about whom we do not know anything. Keri is the grandfather of the Bakairí [Von den Steinen, 1894, ch. 13, pp. 373–381].

THE NAMBICUARA

THE PEOPLE AND THEIR HABITAT

The telegraph line which runs from Cuiabá, the capital of Mato Grosso, to Porto Velho on the Madeira River has created a narrow corridor of the known through the vast unknown stretches of northwestern Mato Grosso. Along this line the Government has established telegraph stations manned by telegraph operators, many of whom are Paressí Indians. A makeshift road, over which trucks can travel, follows the line a few miles past Utiarity to Burity; beyond this the road is no more than a trail along which men ride on horseback and goods are transported by pack oxen. At Vilhena there is an army airfield.

Since 1912, when the line was completed, this corridor has been the highway of men who have sought rubber, diamonds, gold, and Indian souls. No permanent settlements of farmers or stockmen, as yet, occupy this vast hinterland. The rubber concessioner, usually a man from Rio de Janeiro, São Paulo, or Cuiabá with sufficient funds to buy a truck or two, lays claim to a stretch of "galeria" forest, builds a camp along the road, hires a number of tappers, and goes into business. Each underpaid tapper works an area of trees, bringing his rubber to camp on his back or more rarely on oxback. Food must be brought in from Cuiabá, and as supplies, at best, are precarious, any delay in truck transportation brings scurvy and starvation. Eventually the workers drift away, some it is said dying on the way, and the operation ceases. During the last war the United States Government, through the Rubber Reserve, enabled rubber operations to expand. Good camps were established and the road improved. Today, however, the camps and the road are deteriorating, leaving the field to the shoe-string operator with his second-hand truck. The operations of the gold and diamond miners are still more uncertain. In small groups they enter the area, their scanty supplies carried on oxen and mules. Men unfamiliar with the semiarid wastes easily miss the areas where fodder and water can be obtained, the pack animals die and the stranded men are left to find their way out the best they can. At Utiarity I met a miner who was waiting for food supplies from Cuiabá. He had four oxen and two mules. During the height of the dry season in July his mules died of starvation, for during this period horses and mules must be given at least a pint of maize a day to keep them alive. Just before I left, the miner was willing to sell his emaciated oxen and equipment and leave. The best able to withstand the hardships are the missionaries who come as permanent settlers with adequate stores, put up their buildings, and plant small fields of manioc on the bottom lands.

A brief description of the approximately 400-mile truck journey from Cuiabá to Utiarity will provide the reader with an impression of this part of Mato Grosso. As no regular freight or passenger service exists north of Cuiabá it is necessary either to hire a truck or to wait until someone else plans a trip and to join the party. With gasoline costing one dollar (US$1) a gallon, trips of this length are beyond the means of merely inquisitive travelers, and even to anthropologists with expense accounts, charges of this nature may lead to embarrassing questions. Hearing that two American missionaries were negotiating a trip to Utiarity we joined them by paying a part of the expense.

Thus one afternoon Kaoro Onaga and I climbed on top of one of the two overloaded trucks and headed northwest. The trucks were owned by a Cuiabano nicknamed João Tapuya owing to his Indian ancestry. Being an owner of two trucks, he belonged to that class of people who believe it undignified to work with their hands. Each truck, therefore, had a driver and each driver had an assistant and two loaders; thus, besides the owner, there were 8 men to operate two trucks. Among the passengers, besides myself and my student, there were the two American missionaries, Rev. Lawrence W. Buckman and Rev. Robert Meader, Buckman's wife and 3-year-old son, two other women with children-in-arms, and some half dozen men headed for various points on the way. It was up to each person to find his place on the load and to make himself as comfortable as possible among the boxes, sacks, and sheets of corrugated iron, which, with each jolt on the rutted dirt road, shifted position.

That evening we arrived in Rosario some 90 miles north of Cuiabá. On entering the town we had to cross a shallow river which meant unloading and reloading the cargo. In these parts, although bridges are built, they are not repaired so that there is always a period of several months during which the community has to get along without a bridge. The last truck which tried to cross on the ruined bridge nearby fell into the river and it was said a child was killed in the accident. Although having four or five thousand inhabitants, Rosario has no electric lights, no running water, and no public sewage system. I was interested in this quaint old town with its ancient Catholic church and public square, for it was from here that Von den Steinen, Max Schmidt, and many other anthropologists have headed northeast to the Xingú or northwest to Paressí and Nambicuara country.

We put up at a "pensão" or inn where we ate our evening meal of rice, beans, and dried meat topped off with "goiabada" (a kind of stiff, very sweet jam) and coffee. The inn was lighted by lamps common in the interior—a tin can filled with kerosene with a round wick sticking out through the top. Later everyone slung his own hammock from the hooks which stuck out all around the walls for this purpose. Our rest was far from peaceful, however, for other trucks kept coming in during the night, the truckers demanding food and lodging.

Next morning at dawn we were on the road and were soon winding up the steep escarpment to the top of the great sandstone plateau which divides the watersheds of the Amazon and the Paraguay Rivers. At noon, over an open fire, the two Brazilian women prepared a lunch of boiled rice and dried salt pork stewed in vinegar, onions, garlic, and tomato paste. At 6 o'clock we arrived at Parecis telegraph station where we put up for the night in an empty rubber storehouse. During the night the south wind began to blow, and the morning broke cold and drizzly.

After a small cup of coffee we climbed on top of the trucks, wrapped blankets around us, and pulled a tarpaulin over our legs. Although the temperature was not lower than 60° F., the exposure to the wind and drizzle caused considerable discomfort, particularly because the temperature of the preceding day had been around 90° F.

We were now well along on that part of the central plateau known as the Cerra dos Parecis. The soil here is sandy and the rainfall insufficient to support a forest. The vegetation consisted of stunted piqui, mangabeira, fruta de lobo, lixeiro, and other gnarled cerrado trees with the surface sparcely covered with bunches of wiry grass and other drought-resistant plants. During the whole day we saw only four deer and two rheas, which gives some idea of the poverty of the area. This is public domain and apparently unwanted by stockmen owing to its poor soil and lack of water. By now we had left the telegraph line, which crosses unbridged rivers, and were winding around the headwaters of the streams. That night we camped at Sucuruina where two palm-leaf-covered sheds, left by "tropeiros," provided some shelter from the drizzling rain.

The following day the skies cleared and from the tops of the folds in the plateau we obtained magnificient views of the great plain. What few trees could be seen were no more than 5 or 6 feet high. A curious phenomena seen along the plateau are the patches of forest of 5 to 10 acres in extent which appear to grow straight out of the semi-desert. Evidently ground water comes near the surface in these spots, permitting the growth of a genuine forest. Another interesting sight was the birth of rivers. In the shallow valleys formed by the folds, one could first see swampy ground, then tall grass, then bushes, then short trees, and finally the tall trees forming a "galeria" forest which bordered a river winding its way northward to form one of the headwaters of the Amazon system.

At 4 o'clock we arrived at the Sacre River where the trucks had to be ferried across on a raft. As this operation took until dark we camped for the night in some vacant buildings left by rubber workers. Before leaving next morning we visited the waterfall (Salto Bello) about 200 yards below the ferry where the Sacre River tumbles over a sheer drop of about 180 feet. Early in the afternoon we reached the Papagaio River and after ferrying the trucks across we were in Utiarity. Both the Sacre and the Papagaio are deep clear streams about 100 yards in width at the ferry crossings. These headwater streams are evidently fed by underground water, for their level does not vary appreciably during the year.

Utiarity, which was to be our base camp for the remainder of June and for July, is built on an old Paressí Indian village site on the west bank of the Papagaio. It is a division point in the telegraph line, and besides the telegraph operator there is a section boss and a number of Paressí Indian linemen. As the Nambicuara take whatever wire they feel they need, the linemen are kept busy repairing the line. There are 12 houses in the settlement proper with the buildings of the Protestant Mission forming one end of the town and the buildings of the Jesuit Mission forming the other.

The line boss, who is also the mayor of the town, gave Kaoro and me a two-room mud-and-wattle house as our quarters. Our meals we took with the two American missionary families. The Catholic Mission was under the charge of Father Roberto, a Frenchman, and Father João, an Austrian. In addition, there were three sisters in charge of a school. The priests had developed extensive fields of manioc and rice, irrigating the fields by diverting water from the river. They had also set up an electric-light plant, using water as a source of power. There are tremendous possibilities for power development, for Utiarity Falls, situated some half a mile distant, has a drop of about 240 feet. Unfortunately this power resource is located in a practically uninhabited, semiarid region.

The Rev. L. W. Buckman, who has been in the area since 1941, kindly consented to prepare a pack train, using the mission oxen and mules, to go in search of the nearest band of Nambicuara. On the third day after our arrival when our preparations were well along, however, a band of Nambicuara came to Utiarity. In fact they were able to get a ride on João Tapuya's trucks as he was returning from Burity, the end of the truck road. This was Julio's band of some 18 people known by the Nambicuara as the Waklítisu. Their purpose was to bring one of their men who had running syphilis sores to the Jesuit Mission for treatment. This changed our plans, for we now had one of the four Eastern Nambiucara bands in camp, which would give us plenty to do for the limited period of our visit. Also during the first week, Father João returned from the Iranxe village, bringing five men, and offered to assist us in gathering whatever information we could get from them. This we found to be very difficult, as the Iranxe spoke no Portuguese and the missionaries had not yet learned enough Iranxe to make working with informants possible.

As all of the following information, unless otherwise specified, relates to the Waklítisu band, a short description of this band is in order. Today the band consists of 18 individuals, of which Julio is the chief. About 5 years ago, before a measles epidemic decimated it, the band was roughly twice the size it is today. Julio is a man of middle age, has three wives and two children, and probably holds his leadership by being the strongest and ablest man in the band. Except for one of Julio's wives and her daughter who are Elótasu, the members of the band are Waklítisu and related to one another. Julio took the Elótasu woman from the Elótasu band by killing her husband. He claims he did this because the Elótasu chief stole one of his wives some years ago. He claims he is going to steal another wife, for every chief is supposed to have four. Only three other men, Martin, Marciano, and Joaquin, are married, each having one wife. The remaining four are either widowers or as yet unmarried.

Of all the Indians which I have visited in Mato Grosso the members of this band of Nambicuara were the most miserable. Of the eight men, one had syphilis, another had some kind of infection in his side, another had an injured foot, another was covered with some kind of scaly skin disease from head to foot, and another was deaf and dumb. The women and children, however, appeared to be healthy. Owing to the fact that they use no hammocks but sleep on the ground, they are always covered with dirt. On cold nights they remove the fires and sleep in the warm ashes. The Waklítisu wear clothes only when they are given by the missionaries, who ask that they be worn. Their distaste for bathing permits not only a covering of dust and ashes to accumulate on their skin and hair but also particles of decayed meat and fish, which, combined with stale sweat, makes proximity to them rather distasteful. They also appear to be heavily infected with internal parasites, for their stomaches are distended and they are continually passing wind. On several occasions when a number of them had crowded into the small room we used for working we had to cease work in order to air the room.

In their manners the Nambicuara also contrast sharply with the other tribes I visited. The

Caduveo, perhaps remindful of their slave-owning past, are proud, conceited, and boastful. The Arawak-speaking Terena and Paressí, like the Arawak-speaking Waurá, are quiet, unassuming, friendly, and ready to help yet take no liberties. The Umotina speak only when spoken to and appear to wish to be by themselves. They provide information if they think the gifts are sufficient and to their taste; otherwise, they saunter off and are never available when required. An Umotina does just what he wishes to do and hates any kind of dictation. The Bacairí and Camayurá are intimately friendly, talkative, and ingratiating, expect gifts and bestow gifts in return, volunteer information, are full of humor and curiosity, and are clean and polite.

The Nambicuara, on the other hand, are surly, and impolite even to rudeness. On many occasions when I went to visit Julio at his camp he was lying down near a fire and as he saw me approach he turned his back to me saying that he did not wish to talk. The missionaries informed me that a Nambicuara will ask for some object several times and if it is not given to him he will try to take it. In order to keep the Indians out they would sometimes close the screen door, but if a Nambicuara really wanted to enter he would tear a hole in the screen and walk in. The Nambicuara have two well-recognized ways of showing disgust or disdain. One day I stopped a woman carrying a burden basket to take her photograph. She evidently did not like being stopped, for as she passed me a moment later she turned her back to me and passed wind. This the missionaries claimed is a very common custom of the Nambicuara. The men have an even stronger way of showing disbelief and disgust. After listening to something with which he does not agree a Nambicuara will get up, grasp his penis, and slap it sharply against his groin and walk off with a "that for you" look. One might call it a Nambicuara "razzberry." Although some of these personality traits are old and culturally defined, there appears to be little doubt that the Nambicuara have a deep hatred of the white man. They realize that the white men are rich compared with themselves and that contact with the whites has brought diseases which are killing them off rapidly. They realize, too, that both the whites and the Paressí consider them in the lowest category of human beings. The Paressí call the Nambicuara "those who sleep on the ground" and ridicule them in other ways. One does not have to remain long among the Nambicura in order to feel this underlying hatred, mistrust, and despair, which create in the observer a feeling of depression not unmixed with sympathy.

The Nambicuara is the only tribe I have met who speak pidgin Portuguese, which without some training is almost unintelligible. For instance, "bastante" becomes *marante*, "pequeno" becomes *shibi*, "grande" becomes *papai*, and "crianca" becomes *pinto*. If they wish to compare two things to bring out a likeness they say this thing is the brother of something else.

Compared with their neighbors, the Paressí and Iranxe, the Nambicuara are taller, darker, and longer-headed. It is very easy, for instance, even at a distance, to distinguish Nambicuara children from Paressí children when they are bathing in the river. In contrast to the light brown of the Paressí skin the Nambicuara skin appears to have an element of black that gives it a dark-gray undertone. Many individuals have a certain amount of wave in their hair, although the waviness may be accentuated by the unkempt matted condition of the hair. Detailed measurements and indexes are given in Appendix 3. The eyes of the Nambicuara are very dark brown, almost black in some individuals, and have a brightness which contrasts sharply with the rather dull eye of the Paressí. The only other Indians that I have met with this brightness of the eye are the Caduveo. This brilliance of the eyes does not appear to be correlated with health, for even the sick have it among both peoples.

The Nambicuara, as a whole, occupy a territory bounded on the east by the Papagaio River and on the west by the headwaters of the Rio Roosevelt and the Pimenta Bueno River. To the south they extend as far as the headwaters of the Rio Juruena and the Rio Kabishí. To the north they are bounded by a line running roughly from latitude 12°30′ on the Papagaio River to latitude 11° on the Rio Roosevelt. Formerly, it is believed, they extended farther northward. The telegraph line runs through Nambicuara territory beginning at Utiarity and ending at Barão de Melgaço to the west. The territory to the south and east of the Nambicuara is occupied by the remnants of the Paressí. To the north of the Nambicuara are their enemies whom they call the Salundé or Salãosú, probably the Apiões whom the local Brazilians call the Beiço de Pau, owing to the fact that they wear labrets.

Linguistically the Nambicuara are divided into an Eastern and a Western group. Both the Eastern and Western Nambicuara, in turn, are dialectally subdivided. The Eastern group is made up today of four bands: the Elótasu situated south of the telegraph line on the Rio Formiga, a tributary of the Suina River; the Waklítisu just north of the telegraph line on the Juruena River; the Kitánhlu south of the telegraph line on the Camararé River; and the Chiwáisu now including the Hégndisu north of the telegraph line on the Camararé River. The Eastern bands thus extend on both sides of the telegraph line from Utiarity to Vilhena. The Western Nambicuara are composed of at least three bands, the Wáindisu on the Kabishí River (a tributary of the Guaporé River), the Tãondisú and Suédndisu on the upper Roosevelt River. The above-mentioned names were given by Julio of the Waklítisu band. The different subdivisions of the Nambicuara have been called various names in the reports. As far as concerns the Eastern Nambicuara the following names appear to be synonymous. For instance, the local Brazilians call the Waklítisu, Elótasu, and Kitánhlu the Iritoa; these names appear to cover at least part of the people whom Roquette-Pinto called the Kokozú. The combined Chiwáisu and Hégndisu are called the Manduca by the local people, and the Anunzé by Roquette-Pinto. Or, to put it another way, the Eastern Nambicuara of the literature are divided into the Kokozú and the Anunzé by Roquette-Pinto, and into the Iritoa and Manduca by the Brazilians who live in the region.

The confusion in band names in all probability has arisen from the changes in band organization in the last half century. Fifty years ago the Nambicuara were far more numerous than they are today, and no doubt the number of bands was also greater than today. The extension of the name of an important band to lesser bands is thus quite conceivable. The economy of the Nambicuara appears to indicate that there are maximum and minimum limits to the size of a band. If it grows too large for a given area to support, it will break up, or if it becomes so small that its economic security and marital possibilities are endangered it will unite with some other band.

According to the missionaries who live in the area, the number of individuals in each band of the Eastern Nambicuara are as follows: Waklítisu, 18; Kitánhlu, 45, Elótasu, 17; Chiwáisu, 50. Old census figures give the population of the Western Nambicuara as 500, but the missionaries assured me that they doubted whether even half as many exist today. It must be remembered that an epidemic of measles or "grippe" can diminish the population very rapidly. Syphilis and tuberculosis also exist among them. Judging from the physical appearance of the individuals and their general attitude toward life, it appears that the Eastern Nambicuara, at least, are dying out rapidly.

According to Roquette-Pinto, perhaps the earliest visitor to the territory now occupied by the Nambicuara was Antonio Pires do Campo, who went north up the Sepotuba River, which he called Hisipotuba, between 1718 and 1723, and in all likelihood reached the headwaters of the Sacre and Papagaio Rivers. In his Breve Noticia published in 1746, he mentions the Caviro Indians living in the valleys of the rivers running northward into the Amazon River.

Some years later Padre Ayres de Casal mentions a tribe living on the Juruena River, a territory long occupied by the Nambicuara. From 1800 on, rumors about the Indians living in this area increased. In 1862, Dr. Amedée Moure published a monograph on the Indians of Mato Grosso in which he devoted a chapter to the 10 savage, man-eating tribes, among whom he listed the Umotina, Cabixí, Nambicuara, and the Tapanuma (Roquette-Pinto, 1938, pp. 26–51).

The first reliable accounts of the Nambicuara date from 1907 to 1912, the period when General Rondon was putting up the telegraph line between Cuiabá and Porto Velho. In 1912, Roquette-Pinto visited the Nambicuara and the Paressí, and later published the results of his investigations in his book entitled "Rondonia." This book undoubtedly is the first anthropologically competent report about the Nambicuara. After 1910, small Government Indian Posts were established, one at Tolosa on the upper Cravarí River, a short distance east of Utiarity, and another called Pyreneus de Sousa between Campos Novos and

Vilhena. These Indian Posts have had only limited success in attracting the Nambicuara, because the region is agriculturally so poor that it is difficult to grow enough food to maintain a settled population, and at present the Indians only visit these posts occasionally.

Intensive missionary activity among the Nambicuara began when two American Protestant missionaries, Arthur F. Tylee and William R. Henricks, established a mission station at Juruena in 1925. In October 1930, the Reverend Mr. Tylee, his baby daughter, Miss Mildred Kratz (nurse), and three Brazilians employed by the mission were killed by the Nambicuara belonging to Julio's band. Mrs. Tylee, although struck three or four times on the head while rushing to her child who was still in bed, was only stunned and came to after the Indians had left. One Brazilian hired man escaped to get help from the telegraph station. Some years later new Protestant missions were established at Campos Novos (Nambicuaras) and at Utiarity. At present only the mission station at Utiarity is in operation.

The Jesuits established a mission at Juruena about 1930, but in 1940 moved it to its present site in Utiarity. Today both the Protestant and Catholic missions are, therefore, located in Utiarity, which not only is connected by truck road to Cuiabá but is also centrally located. To the east and south are the remnants of the Paressí, and to the north, the Iranxe, who, although not speaking the Paressí language, appear to belong to the Arawak-speaking family. Further northward are tribes with which the missionaries are planning to make contacts. To the west are the Nambicuara. Although officially on friendly terms there is considerable tension between the Protestant and Catholic missionaries, as they are competing for the allegiance of the same Indian population.

ECONOMY

Although the Nambicuara practice a shifting agriculture, their dependence upon the wild animal and plant life of the region is so extensive that they might well be classed as nomadic hunters and collectors. The semiarid plateau provides little in the way of agricultural land, game, or fish. What little farming is practiced is carried on in the narrow "galeria" forests of the headwater streams. The deep clear streams make fishing with timbó difficult. Game in the forests and on the plain is scarce. Yet by exploiting all the resources of the area the Nambicuara are able to survive. In contrast to the other tribes reported in this monograph the Nambicuara have the broadest resource base, as the list of their resources in Appendix 1 indicates.

The Eastern Nambicuara occupy the high plateau between Utiarity and Vilhena. At Utiarity the altitude is 442 meters and at Vilhena 665 meters. The dry season extends from May to September. Except for occasional south winds, which bring a cold drizzling rain for a day or two, the season is clear, cool, and dry, the daily temperatures ranging from 60° to 80° F. During this period the grass withers, the livestock of the white men having to subsist on shrubs and what fodder the owners can provide. Horses and mules, particularly, suffer during these months. In August the Indians burn the dry grass so that with the first showers new grass can grow out and attract the deer, which the Indians can then hunt.

The dry season, which the Nambicuara call *kwênkisu*, is the most difficult. By the end of June they have consumed the manioc, maize, beans, and other crops which they have planted. During July and August they subsist on palm nuts, combarú beans, fruta de lobo, snakes, insects, fish, and whatever animals they can kill on the plateau or in the forest. The rainy season (*wahíasu*) is divided into periods depending upon the fruits as they come into season. September is known as *yadêdunsu*, for during this period the people depend upon the jaboticaba fruit. October and November are called *ya'awadjítsu*, for during these months the bacaba palm nut ripens. December and January are termed *áhru*, or piqui time. February and March are known as *casúru*, which appears to cover a variety of berries and small fruits. April and May are termed *daugadítsu*, as many fruits and nuts come into season, particularly, the cashew nut. During these months the garden crops also come in, giving the Nambicuara a short period of abundance.

SETTLEMENTS AND SHELTERS

Each of the four Eastern Nambicuara bands has a defined area within which it hunts, fishes, collects, and grows its crops. These territories include at least one stretch of river and the "galeria" forest which lines its banks. Except during the planting and harvesting season the members of the band are on the move up and down the narrow confines of the territory. Within this hunting territory they have camping places rather than villages. A semipermanent camp site where fields are cultivated for 2 or 3 years is known as *sinaiésu*. Any place where the band or a family may stop overnight is known as *siénsu*. At present the Waklítisu band has one house (*sísu*) at the place where it is farming. The entire band occupies the house, each family having its own fire around which it sleeps at night. The unmarried men gather around another fire. Julio informed me that their house is rectangular with stake walls and a gable roof covered with sapé thatch. Some years ago when the band was larger he said they occupied a different place on which they built three houses. These houses were built by placing a series of saplings into the ground to form an oval. The tops were then fastened to a ridge pole, the framework being covered with sapé or palm fronds. A smaller beehive-shaped house is made in the same way. Houses of this type are from 6 to 10 feet high. Near the living house they build a small flute hut (*sinedónklesu*) and, when the occasion demands, a shaman's hut (*sihádentsu*).

If the weather is cold while they are out hunting the band or the family may build a temporary brush hut for the night. Sometimes only a windbreak (*siotáutsi*) is considered sufficient. On warm nights during the dry season the group camps under a tree. In favorite hunting places the same camp site will be used repeatedly. When the soil around the permanent camp site or village becomes exhausted, fields are cleared some distance away and small huts are put up for the workers. As the distance increases the old camp site is eventually abandoned and a new camp site is established.

As the Nambicuara do not use hammocks, beds, or seats, there is not much in the way of furniture in their shelters. Utensils are restricted to a few gourd vessels, tin cans, burden baskets and small flat baskets, fire fans, bows and arrows, and tools used by men. When they move, these articles are placed in burden baskets which are carried by the women. The Waklítisu do not make pottery, but they sometimes acquire pots from the Paressí in exchange for game or fish.

HUNTING, FISHING, AND COLLECTING

Today, at least, the Waklítisu band is a producing and consuming unit. Whatever a man or his family gathers is shared among the band. This, however, does not mean that the whole band goes out every day or that they keep together while out hunting, fishing, and collecting. Except when the men go hunting such large game as the jaguar, tapir, and peccary, the acquisitive unit is the family. Every morning while Julio's band was camped in Utiarity a family or two could be seen going out, the husband walking in front armed with bow and arrows, the wife following and carrying a burden basket on her back and a baby strapped on her hip, an older child following her. As they move slowly along they collect fruits, nuts, insects, snakes, ants, lizards, rats, wild honey, and a great variety of grubs or larvae. When they come to a pond they wade around with small baskets in their hands and scoop out small fish. On one of these trips I observed them catching fish that were only 2 inches in length. These were later thrown on hot coals and eaten without being cleaned. Small birds no larger than a sparrow are shot if the man can get near enough to use his bow and arrow. If they come to a burití stalk of the right size they will cut it down, put it into the burden basket, and take it to camp. On their way home they will usually pick up dry firewood. Thus, when a family returns at nightfall the basket will be full of a wide assortment of foods and useful materials.

Monkeys, deer, and large birds are generally stalked by a single hunter, particularly if he has a gun. Julio and Marciano each owned a shotgun and quite often hunted alone. If a man goes out in the morning and runs onto a group of peccaries he will hurry back to camp, and all the men will then go to where the peccaries are feeding. When they hear the peccaries the hunters will form into three files, one heading directly toward the pigs, the other two flanking the game on each side. When near enough the middle file stops and spreads out, the other two files then slowly surround the pigs. As the flanking movement is going on the pigs sometimes move, but the middle group of hunters maintains contact with them and informs the flanking hunters with bird calls. When completely surrounded the flanking parties drive the pigs back against the central group where the best archers are stationed. As the pigs charge back, they are shot at close range. Usually an arrow will stop a peccary so that it can be killed later with a club. If the hunters are well organized very few peccaries escape.

The hunters then open up all the pigs and take out the viscera. The entrails are emptied and along with the heart, liver, etc., are thrown on hot coals to broil and are eaten on the spot. When opening an animal the hunter grasps a handful of skin over the belly and cuts it off with a bamboo knife leaving a round hole through which the viscera are drawn out. After everyone has eaten, the carcasses are carried back to camp where the meat is cut up and shared among the families, the man with a large family getting more than one with a small family even though the man had not shot anything. All meat that cannot be eaten in a day or two is cut up and dried.

The Nambicuara now have a few dogs which they use when hunting jaguars. The dogs drive the jaguar into a tree where it can be shot with a gun or with arrows. Sometimes a wounded jaguar will attack the hunters, and injuries occur. Marciano's 6-year old son had his head and face clawed by a wounded jaguar which his father was not able to kill with the first shot of his shotgun.

Armadillos are dug out of holes. The soil is first loosened with a stick and then dug with a gourd, the diggers sometimes having to go as deep as 8 feet. When they get near the armadillo they put a long stick under it and force it up against the top of the hole in order to prevent it from digging further. When near enough a man reaches into the hole with his hand and pulls out the armadillo. If the hunters are very hungry they will roast the armadillo on the spot, taking left-over pieces of roasted meat home to their families.

Although sharing is the custom, and it is amusing to observe several men sitting around a 6-inch lizard to eat it, single hunters sometimes succeed in avoiding their obligations. One day as I walked along with Cascudo, followed by several Nambicuara some distance behind, he killed a snake and threw it into the bushes and signaled to me not to say anything. Later that day he returned to the spot, built a fire, roasted the snake, and ate it by himself.

Caymans are hunted by first finding their hide-outs under logs or overhanging banks. When one is found under an overhanging bank the hunters peel a number of slender poles and begin to thrust them down through the bank to force the cayman out. Men are stationed above and below the spot, and as the cayman comes out he is shot. When he hides under logs the hunters feel for him with their feet. The hunters are so nimble that few of them get bitten. The large rodent, paca, is also hunted in this way, for it hides in holes under overhanging banks.

The large water snake, anaconda, is hunted in pools where it lies in wait for game. When the hunters have trailed an anaconda to a water hole they keep shooting arrows into the water until they strike it. The first strike then indicates where the snake is, and they continue shooting until the snake weakens and can be pulled out. Sometimes the snake grabs a hunter by the arm, but the others are there to assist if anyone gets into difficulties.

Small anteaters are dug out of holes but the larger kind which does not go into holes is hunted by two men armed with clubs. The men chase it, one on each side, and as the anteater turns on one he strikes it on the nose with his club and then jumps into a tree. The other hunter then strikes it. This continues until the anteater dies.

Monkeys are chased from tree to tree until they tire and come down to hide in a hole in the ground. Dogs can then overtake the monkey or he can be shot or dug out of the hole. Deer usually do not fall when shot, but the hunter chases the wounded deer until he can shoot more arrows into it, especially into the legs.

Although the Western Nambicuara are said to use arrows poisoned with curare, the Waklítisu say they do not use curare but that they know how to prepare it and that they formerly used it in raids. As arrows do not penetrate bone, the hunter tries to shoot at an angle so that the arrow will enter the chest cavity, or he will aim between the neck and the shoulder bone.

The Nambicuara hunt and eat all birds except the urubú. Large rheas are not hunted because it is difficult to approach them on the open savanna, but they hunt for rhea eggs and the young birds.

When hunting caymans they do not use the word "cayman," nor will they take their eggs for fear of angering the mother cayman. After a jaguar or tapir is killed the hunters sing and dance the following night.

Every group hunt has a hunt leader who is an experienced man. He tells each man exactly what he is to do. Hunting such animals as peccary, tapir, and jaguar demands careful teamwork. If the band splits up to hunt, the band chief will appoint the hunt leaders. If any man disobeys the hunt leader he will take the man's bow away from him and send him back to camp where he has to listen to the riducule of the women. This is considered a great humiliation and happens only seldom and then to youths who are, as yet, inexperienced and overanxious to make a kill.

As the Nambicuara hunt along the banks of the rivers they are always ready to shoot any fish that happens to come near the bank. Sometimes they stand in one spot for hours waiting for pacú or matrinchã to pass near the bank. Certain berries which the fish like to eat are often thrown into the water to bring fish to the surface. At other times they tie a piece of broiled meat onto a stick and push the stick into the bottom. A man then stands on the bank, sucks air through his cupped hand, and as he lets the air out with a grunt he motions with his hand as if beckoning the fish to come near. This appears to be a magical act, for the Nambicuara claim that the fish understand the call. Sometimes they even talk to the fish saying that they have brought fat meat for them.

Timbó fishing is practiced in the shallow cutoffs of the main streams. First the pond is dammed off, then bundles of timbó vine (*kúnte*) are thrown into the shallow water and beaten with sticks until the vines are crushed, the bundles are then doused in the deeper water. As the fish in the ponds are very small, they are scooped up with baskets, either the cylindrical burden baskets or a shallow square basket. They also use a conical trap made on the spot from a few sticks which they thrust into the weeds where the fish are hiding. When they have finished with this trap (*tanáru*) it is thrown away. Compared with the efficient equipment and methods in the Upper Xingú, the Nambicuara timbó fishing appears very elementary. The small fish are wrapped in leaves and placed in hot ashes until cooked. Large fish are broiled on a babracot. The Nambicuara also claim that they fish at night with torches along the river banks. This method may have been taken over from the Brazilians.

AGRICULTURE

The principal food crops grown by the Nambicuara are bitter manioc, sweetpotatoes, arrowroot, cará, maize, beans, and peanuts. To this list we must add such nonfood crops as cotton, tobacco, urucú, and gourds. The scientific and native names of these plants are listed in Appendix 1. In more recent times they are known to produce sweet manioc and sugarcane. The dependence upon food crops in relation to game, fish, and wild food plants is difficult to gage. The statements of missionaries, however, appear to indicate that cultivated crops do not provide a year-round food supply and may actually play a minor role as compared with dependence upon noncultivated resources.

Farming is done on the slopes of the "galeria" forests, where, as we have seen, they also do most of their hunting and collecting. The Waklítisu band clears and cultivates a single field and, as we have said, lives in a single house while thus occupied. In the past the field (*haítsu*) was cleared with a stone ax (*etúnsu*) and a wooden club (*hukwénisu*). Today steel axes and machetes are used, but the method of planting is still the same. The efficiency of steel tools over stone axes and wooden clubs is indicated by the statement that in the past when a new field had to be cleared the people had to work during most of the wet season in order to fell the trees, a task which they now perform in May and June.

Formerly the light undergrowth was pulled out by hand and the bushes and saplings were beaten down with the wooden club. The Nambicuara had a unique way of felling trees. Starting near the bottom of the slope, they cut all the small trees part way through, then selected a number of large trees as kingpins. When these large trees were felled they knocked down the smaller trees below them. This was continued until they had a circular clearing of the required size on the slope. Today the clearing is done with axes and knives, but the method of felling is the same. All clearing has to be completed by the end of June to permit the felled trees to dry.

In late August, when the cicada begins to sing and the first thunder is heard, the Nambicuara return to undertake their planting activities. At a given signal, men with lighted bunches of dry grass set fire to dry trees and bushes all around the edges of the field. The rest of the people are concentrated at the river's edge at the bottom of the slope, and as animals, such as rats, lizards, and snakes, flee toward the water they kill them. After the fires have died down the people go through the field collecting grubs, insects, and whatever else that is edible.

Among the stumps and unburnt logs the Nambicuara hoe up hills about 3 feet in diameter into which they stick 6 or 7 pieces of last season's manioc stems, each about 10 inches long. These hills are made about 5 or 6 feet apart. Formerly they used a digging stick (*kadikádsu*) but today the metal hoe (*isakúlusu*) is used. Bitter manioc (*walídnsu*) is their most important crop.

After the rains have begun and the manioc is several inches high, they begin to plant maize (*kayátsu*) of which the Nambicuara have several varieties. Maize is planted between the manioc hills by making a hole in the ground with a digging stick into which 2 seeds are dropped. As the holes are about 6 inches deep, the seeds are not covered. Whether this is to protect the seeds from birds is not clear.

When the maize has grown tall enough to provide shade they plant beans (*kwą́'su*), sweetpotatoes (*wísų*), and tobacco (*étsu*). The bean which the Nambicuara grow looks like a large red kidney bean and has a tough skin. Beans are planted one seed to a shallow hole and covered. Sweetpotatoes are planted by placing cuttings in shallow trenches near logs and stumps. When planting tobacco a man places a handful of seeds on a leaf, climbs onto a high stump, and blows the fine seeds so that they scatter over the field. They weed the field only once when the maize is about a foot or two in height. Cotton is planted in the field but urucú bushes and gourds are planted near the houses. After the planting is finished and the field is growing well the people leave on their continuous rounds of hunting, fishing, and collecting.

The Nambicuara method of processing manioc in comparison with that of the Camayurá is simple and crude. The following describes the method used today: Marciano's wife dug up a burden basket full of manioc from a field belonging to the Protestant Mission. She sat under a tree and peeled the tubers with an old butcher knife (formerly a piece of bamboo was used). She washed the peeled tubers and placed them in a calabash. She then took a grater made from a piece of kerosene box about 2 feet long and 6 inches wide to which an 18-inch strip of perforated tin was nailed. She placed one end of the grater in a larger copper basin (belonging to the mission) while the other end rested on the edge, and while steadying the grater with one hand she grated the tuber with the other. The tubers did not stand in water nor were they dipped in water during the process of grating.

After the tubers were grated she dipped out a calabash full of mash and began pressing it with her hands and pouring the juice into another calabash. After she had drained off as much juice as possible she picked up a handful of mash (*wiénere*) and rolled it and squeezed it until no more juice could be expelled. This ball she placed in another calabash and continued making balls until the calabash was full. She then patted down the balls to form a round loaf about 10 inches in diameter and 4 inches thick, which she set out on the bare ground to dry in the sun. After several days in the sun these loaves get hard and dry and form the storable product (*kinokányere*) from which the edible cake *hi'ínire* (also called *walídnsu*) is baked. The juice (*eyáuse*) which was left in the calabash she poured into a slight depression in the ground, and after the liquid had drained off she collected the thin film of starch flour (*akaínisu*) along with some sand, rolled it into a ball, and placed it in hot ashes to bake. The lack of pottery vessels prevents the Nambicuara from saving and boiling the juice. They know, however, that the juice is valuable, and when they have cooking vessels they boil it to form a thick porridge.

When the Nambicuara wish to prepare a greater quantity of pulp they use a piece of bast for a press. This is a piece of embira bark about 3 feet long and 8 inches wide called *sáru*. A woman rolls a ball of pulp in the strip of bark and twists the bark until the pulp is dry. The balls are then placed on a platform under which a fire is lighted. In this manner large quantities of *kinokányere* can be prepared in one day.

When a woman gets ready to bake a manioc cake she pushes the hot coals and burning wood to one side and pats down the hot bed of the fire with a flat piece of wood. She then breaks off pieces from a dried manioc loaf and crumbles them over the bed of the fire by rubbing them in her hands. When she has crumbled up enough dry manioc, she pats down the flour to form a round, flat cake about 10 inches in diameter and from 1 to 2 inches in thickness. She covers the cake first with hot ashes and then hot coals. After one-half hour she uncovers her oven to find a brown cake covered with ashes and cinders. This sour, dirty, gritty product in no way compares with the fine-textured, sweet *menyú* of the Camayurá, the meal for which is prepared by crushing the dry ball in a mortar, then sifted to remove the rough fibers, after which the flour is dampened and baked on a pottery baking plate. Sometimes the whole manioc loaf is placed in the fire, and as it bakes the Nambicuara begin to break off pieces from the outside. For ceremonial purposes they bake cakes about 2 feet in diameter.

Toward the end of the rains in April and May the Nambicuara return to their fields to enjoy the fresh garden products. The harvest is inaugurated with a harvest ceremony (*haikánakidutsu*). Fresh maize, peanuts, and sweetpotatoes are roasted, manioc cakes are prepared, and, if possible, manioc juice is boiled to make chicha. These garden products, along with meat, supply the food for the feast, which lasts for several days. The sacred flutes (*waínrhu*) are played in the flute hut, the spirits of the ancestors are present, and food and drink are offered to them.

The subsistence activities of the Nambicuara are, thus, closely associated with the annual cycle of growth in which agriculture forms but a part. The dependence of the Nambicuara upon the wild products of the forest and plateau are much more complex than has been indicated. They supplied long lists of names of plants, insects, and animals for which no Portuguese names could be found. A full understanding of their economic dependence upon the environment would come only by someone following a band of Nambicuara throughout the year to observe the complete annual cycle of subsistence activities. For instance, they say that they eat the blossoms of certain plants and a great number of grubs, larvae, and insects. A favorite dish is to crush in a mortar manioc cakes with boiled beans, broiled meat, ants, palm nuts, monkey and bird bones.

As an example of the variety of uses to which the Nambicuara can put a plant we can take the burití palm: (1) They eat the pulp surrounding the scaly covered nut. (2) They use the fibers from the new growth to make twine. (3) They use the tough, flexible cortex of the frond stalk for making baskets. (4) They fell the burití so that a certain variety of grub can collect and multiply in the starchy pith in the heart of the tree. The grubs or larvae they then eat uncooked. (5) The dried frond stalks are tied into bundles and used as floats for crossing rivers. In addition, the burití palm has male associations, for only men can prepare its products. When a male child dies a piece of burití fiber is left over his grave.

The Nambicuara make fire by the drill method. They cut two round pieces of dry stick about 18 inches in length and three-quarters of an inch in diameter from some bush that has a soft pithy center. The lower stick is split and into the flat side shallow notches are cut to hold the drill in place. The drilling stick is then inserted into the notch while the lower stick is held in place by the toes of the man as he squats over it. He then begins to twirl the stick between his palms, pressing downward. As his hands reach the bottom, he quickly brings them to the top and continues drilling until the pith in the lower stick loosens into small smouldering balls. These he places into a handful of dry burití fiber and begins to blow on them until the fiber ignites. About 2 minutes is all that is required to make a fire by this method.

MANUFACTURING

The material equipment of the Eastern Nambicuara is extremely simple. Many items, such as the conical trap for catching fish, the floats for crossing rivers, the loom for weaving arm bands, and the mortar and pestle for crushing food products are made for the occasion and are discarded when the task is completed or when the people move. The small grater and the few gourd vessels, small baskets, and twine, the woman carries in her burden basket, whereas the modern axes, knives, and other tools, along with his ornaments, the man carries in a similar basket, or he straps this basket on the back of a boy while he walks in front of the file carrying his bow and arrows or gun ready to shoot whatever game is met along the way. Whenever they kill some animal or catch a few fish and feel hungry they stop and prepare a meal. During the dry season they are at home anywhere in their band territory, moving only when hunger spurs them on.

Today, of course, the Nambicuara have steel axes and knives. The heavy equipment of the Waklítisu band in 1949, consisted of three axes, two shotguns, and some half dozen hoes which were hidden near their permanent house. Each man had a butcher knife, but all men did not have bows and arrows. There did not appear to be any desire on the part of each man to possess these implements. So long as the band had a few of these objects everyone seemed to be satisfied. Cascudo, a widower when he arrived in Utiarity, did not possess a bow and arrow, nor a gun, nor an ax. By working for the Protestant missionaries he acquired an ax and when Marciano died he inherited his bow and arrows. After a few days, however, he had given the bow and arrows to a Brazilian in exchange for a felt hat.

Examining the hand tools which Julio used, the following articles were found: A chisel (*kwatíru*) made by inserting a piece of steel into a wooden handle wound with twine; a small bamboo knife (*alkúkwirikatu*); a hardwood drill (*hískatu*), used with sand for perforating tucum nut shells in making beads; a piece of sandstone (*dáligisu*), used as a whetstone; a number of rough leaves of the lixeiro tree (*kle'ênatu*), used as sandpaper; and a comb (*ha'álatu*). Each of Julio's three wives had a burden basket, a small square basket, and two or three gourd vessels of various sizes. A single wooden mortar and pestle did service for the whole band.

One of the most important implements of the Nambicuara is the bow, *húkisu*, made from the piuva (jacaranda-copaia) or the siriva palm (*Syagrus speciosa*). By far the most common is the bow made from piuva, ranging between 6 and 7 feet in length, flat on the inside and convex on the outside. One of the bows examined measured 2 meters and 14 cm. in length, 4 cm. in width, and 1.5 cm. in thickness in the middle. This bow is made from the honey-colored heartwood of a small piuva tree. After cutting a piece of the required length the bow maker splits it by using two or three axes. He then trims off the outer layer of wood with an ax, shapes it with a knife, and polishes it with lixeiro leaves. The inner side of the bow is flat or slightly concave, depending upon how the wood splits. Shoulders are made at each end to hold the bowstring. The bow is made from green wood, no attempt being made to season it. The siriva bow is the same shape and is made in the same way but the black wood surrounding the center is used. The siriva bow is more common among the Western Nambicuara.

The bowstring (*halunwínisu*) is made from tucum fiber and is about one-eighth of an inch in thickness. The cord is much longer than required and the extra length is wound around the bow for about 6 inches just above the hand hold. The cord is wound from left to right, the running end being brought back over the previous turn to form a cross on the inside of the bow. The string is always smeared with urucú (*dúse*). As the bowstring wears out it is not removed but new lengths of tucum fiber are woven into the extra length.

The basis of the Eastern Nambicuara arrow is the jointless shaft (*alukwírikatu*), which appears to be cane (*Gadua* sp.). Before being made into an arrow the cane shaft is heated over a fire to harden it. Into this cane shaft, which is roughly three-eighths of an inch in diameter, a piuva foreshaft (*iháikatsutu*) is inserted for a distance of 4 or 5 inches, leaving about 20 inches protruding. The joint is wound with sipó vine for about 6 inches. To feather the arrow, a 10-inch macaw feather (*akinéntsu*) is split and the halves are laid parallel to one another on opposite sides of the butt end of the shaft. The feathers are lashed to the shaft with cotton twine, the lashings being about an inch apart. Although the feathers are laid straight along the shaft, they assume a propellerlike pitch which gives the arrow its revolving motion when in flight. The lashings are covered with beeswax. The butt has a V-notch to hold the bowstring, which is again tightly wound with waxed cotton twine. By attaching various parts to the end of the foreshaft, four different kinds of arrows about 5 feet long are made.

(1) The *hányesu,* an arrow which is used for shooting monkeys and large birds, is made by lashing an inch-long slender barb of siriva palm or piuva about an inch back from the sharpened point of the foreshaft.

(2) The *saláitsu,* or fish arrow, is made by lashing four slender points of wood about 2 inches long to the end of the foreshaft. This arrow need not be feathered. Today wire is sometimes substituted for the wooden points.

(3) The *dúnkisu,* or blunt bird arrow, used for shooting small birds, has a separate piuva foreshaft, the end of which forms a rounded flat surface about an inch in diameter.

(4) The *hóptisu,* or big game arrow, has a broad split bamboo point about 12 inches in length which is lashed to the foreshaft. As the bamboo point is slightly grooved along the center, the foreshaft lies along the groove permitting it to be lashed firmly to the tapered sides of the point. Formerly curare poison was smeared along the groove. This was also the arrow used in war.

Sometimes a bamboo point is serrated on one or both sides. In former times, this arrowhead was poisoned with curare. It was attached loosely to the shaft so that when it struck an animal it became detached from the shaft. This arrow was used against big game like the jaguar, tapir, deer, and against human enemies.

The bow is held in a vertical position when shooting; the arrow is held with the thumb and forefinger while the middle and ring finger pull the bowstring, with the arrow resting against the hand side of the bow.

Cordage is made from the fibers of the tucum and burití palms and from cotton. The tucum palm (*Astrocaryum tucuma*), *hatátsu,* provides not only fiber but the hard shell of the nut is used for making the black, round, flat necklace washers, and the thorns from the trunk are used as spikes in the manioc grater. Tucum twine which is a little stronger than burití twine is used for bowstrings, for stringing beads, and for many other purposes. When a man needs tucum twine he sends his wife to gather the palm leaves. As the young trees grow in clumps, it is a simple matter for the woman to cut off a number of fronds. The woman then takes a long slender leaf, bends it double in the middle so that the woody fiber breaks, then doubles it back and pulls downward on one half while holding the other, thus stripping the fine fiber from the body of the leaf. She then turns the leaf over and strips the other half. Later she picks off whatever bits of green skin that adheres to the fibers and twirls one end between her fingers to keep the fibers together. From each leaf, therefore, she gets a pale green whip of fiber which forms the raw material for cordage making. A number of these whips are wrapped in embira, the bundle being known as *dáidjusu,* and stored away for future use.

When a man wishes to make cordage he begins to add these whips to existing bits of twine or cord. I never saw a man making a completely new cord. The end of an old piece of cordage is unraveled and three whips are joined to it at intervals of several inches and rolled together on the thigh, the motion being toward the body. This stroke rolls up the fibers into three tight strands. On the downward stroke the three separate strands are "laid up" or rolled together to form the cord. Three new whips are added and the process is repeated until the cord is of the desired length. If the man wishes to make finer cord he separates each whip into a number of parts.

The making of cordage from burití (*Mauritia vinifera*), *yélasu,* as has been mentioned, is man's work. The man finds a young burití palm and from the top of it cuts down the shoot which encloses the three leafstalks. This growing part is a tapered rod about 5 feet long and triangular in shape. When twisted this rod cracks open revealing countless fine strands covered with a green skin, each strand having a hard embryonic leaf stem running through the center. First the man peels off the green outer skin and then pulls out the embryonic leaf stem. What he has left is a hank of lemon-colored, soft, grasslike ribbons the length of the original rod and about one-half of an inch in width. These ribbons he coils and places in a pot and boils for about 20 minutes so that the starchy material is loosened. In former times the hank was placed in the hot sand under the fire and sprinkled with water. When the coil is cool enough to handle the man opens it out and begins to rub it between his hands just as does a woman washing a strip of cloth, periodically dipping it into the warm water. As he rubs, the hank gets quite sticky as the starchy material breaks down. After one-half hour the starchy material is washed out and the ribbons begin to separate into fine strands of fiber. The hank is then shaken out and hung up to dry. When of good quality, that is, when the rod is of the right age, the fibers dry out a pale cream color. While the man is occupied at this task the girls make temporary necklaces from the green outer skin and the boys use the thin central stems as arrows for their small bows. These dried-out hanks are a favorite decoration of the Nambicuara when painted with horizontal bands of urucú. They can then be suspended from the neck and allowed to hang down the back, or pieces are attached to the arm bands, leg bands, and in front to the belt.

Cotton twine is used for making arrows, stringing beads, weaving arm bands and the narrow shoulder straps which women use for carrying young children. From the cotton bush (*kúndsu*) the woman picks the bolls (*kúnkisu*) to make cotton twine (*kúndlisu*). As the making of burití twine is a man's task, so the making of cotton twine is purely a woman's task. After picking the seeds from the bolls she spreads the cotton into flat disks and then into circles. Next she breaks the circles and joins them to form a long rope about an inch in diameter. This rope she winds around her arm, twists the end of it with her fingers, and fastens it to the top of a spindle (*waníkisu*). With a twirl of her fingers she sets it spinning and lets it drop, plucking out the cotton as it is spun. Later she unties the string and fastens it near the whorl and then by spinning the spindle on the ground the twine is wrapped around it. This process is repeated until the cotton rope is used up.

The men do the weaving on a true but very makeshift loom. Two forked sticks, roughly a yard long, are thrust into the ground about 2 feet apart and at an angle. One cross bar rests in the forks while another is fastened on near the ground. The warp is wound around these cross bars. The heddle, shuttle, and sword are used in weaving the narrow material. It seems very likely that this type of loom was taken over from the Arawakan Paressí.

The bast strap or band (*sa'am*) is made from embira and is used for pressing manioc pulp, for carrying children or baskets, and, when cut into strips, is used for tying up bundles.

ORNAMENTATION

The Eastern Nambicuara also make a wide assortment of ornaments from tucum nuts, shell, teeth, and bamboo. From the shell of the tucum nut they make black washers which are strung for necklaces or ear ornaments. The irregular-shaped washers are first ground down to an almost paper-like thinness on a piece of sandstone. They are then strung tightly on a string and the maker begins to rub them against a stone in order to make them circular. He continues rubbing until the washers are no more than a quarter of an inch in diameter, for the smaller the washer the more highly the necklace is valued, as this process takes many weeks.

The ear lobes of both men and women are perforated so that tucum shell washers, beads on a string, and triangular pieces of shell can be suspended from them.

The septum of the nose and the upper lips of men are perforated. Through the hole in the septum they force a slender piece of bamboo about 2 inches in length. These adornments give a peculiar expression to the face, particularly when the man is speaking. Julio was especially proud of these ornaments and claimed that white men were just like women because they did not wear them. On special occasions a blue macaw feather about 10 inches long with a bunch of red feathers near the lower end is worn in the nose. Only shamans wear a hat made from jaguar skin.

The most popular necklace is made from tucum washers and is worn by men, women, and children. Short lengths of bamboo, monkey teeth, jaguar teeth and claws are also used for making necklaces for men. If very long, any necklace can be worn over one shoulder and under the arm. A special type of necklace for men is made by suspending black mutúm feathers from a string alternating with lengths of bamboo. Generally the feathers also alternate, some being long and some short. A rare but highly valued necklace is made from the shiny black horns of a large beetle.

Arm bands about an inch in width made of woven cotton are worn above the biceps by both men and women. From these, men suspend tassels of burití fiber. This fiber is also worn around the wrists and ankles. Wrist bands are also made for women from the tail of the armadillo.

Around the waist both men and women wear a burití cord; if possible, this string is strung with glass store beads. In addition, men sometimes suspend a lenth of burití fiber from the front of the belt.

Men paint their faces with urucú, drawing a band from each side of the forehead down to the chin, another band across the eyes and bridge of the nose, and then a band from under each eye across the cheeks. On the body they draw two stripes, starting from the abdomen up to the nipples and then over to each shoulder. The arms and legs are dotted with red or black spots. The hair is seldom smeared with urucú.

SOCIAL ORGANIZATION

(See chart 13)

The names of the Eastern Nambicuara bands appear to be derived from characteristics peculiar to the band territory. The Waklítisu are cayman people for there are many caymans (*waklisu*) in their territory. The Elótasu are open plains people, for they live on the open plain (*toku*) of the upper Camararé River. The Kitánhlu get their name from a small fruit called *tantu.* The Chiwáisu are bee people from the word *waisu*, bee. The Hégndisu are burití fruit (*héeru*) people. Although these bands are not politically united under a single chief, and sometimes even resort to open conflict, they consider themselves a single people, or as Julio phrased it, "We can speak with one another and we came from the same hole in the stone mountain."

The origin myth of the Eastern Nambicuara, as it is told among the Waklítisu band, can be summarized as follows:

> Before the Nambicuara came there were only animals, birds, plants, and beings who could change from animal and bird to human form. At that time the Nambicuara were inside a stone mountain called *yahaíndurukatsu*, which is situated north of the telegraph line near Campos Novos (roughly in the center of the territory now occupied by the Eastern Nambicuara). One day the monkeys heard people speaking inside the mountain and went to tell *oklihάitlisu* who changed himself into a black and white woodpecker and flew with all his strength against the mountain. When the mountain broke some were killed and some injured but many came out alive. The ghosts of the dead people remained around the mountain where they still are and where all Nambicuara go after they die. The injured people *oklihάitlisu* sent into the bush, but the people who were sound of body he put into good clean places and gave them the piuva bow and taught them how to grow manioc and sweetpotatoes. He also gave them the flute (*wáinrhu*), and taught them how to sing and dance. *Oklihάitlisu* is thus the culture hero of the Nambicuara. In human form he looks like a Nambicuara Indian, wears ornaments in his ears, nose, and upper lip and paints himself with urucú. Yet today people no longer see *oklihάitlisu*, for he has gone away. They do not have rituals connected with him, nor do the shamans solicit his aid. But the stone mountain from which the Nambicuara came is still recognized as the place of the dead. On ceremonial occasions the ghosts of the ancestors come to the encampments and villages from the mountain, returning after they have been given food.

Although every band has a leader or chief it is not quite certain whether these leaders get their positions through succession or by personal strength and prestige. Julio claimed that he is headman because his father was a headman, but the other members of the Waklítisu band claim that the strongest man is always the leader by common agreement. The Nambicuara appear to value two qualities in a man—"a strong body" and "a strong mouth." The chief is like a tapir (*alúnsu*) which is the strongest of the animals; thus, a chief is called *alunsáidnara.* A shaman gains power by talking or by having "a strong mouth," as the Nambicuara say. The strongest man is one who combines these qualities and is at once a strong man and shaman—he becomes an important chief.

The survival of the band, the Nambicuara believe, depends upon the *alunsáidnara.* He is the hunt leader, the head farmer, the one who organizes trade between the bands, the ceremonial head, the war leader, and the settler of disputes. Every successful chief is supposed to have four wives but otherwise has nothing to distinguish him from the rest of the tribesmen.

Relationships between the bands of the Eastern Nambicuara are characterized by intermarriage, trade, occasional joint ceremonies, and wife stealing and consequent armed conflicts. Intermarriage occurs when cross cousins are not available for marriage within the band. The Chiwáisu and Hégndisu obtain pots from the Western Nambicuara in exchange for wax, feather ornaments, beads, and bows and arrows. These pots they in turn exchange with the Eastern Nambicuara bands for knives, axes, and tin cans.

When one band wants to meet another in order to exchange goods the approach is made in a very formal manner. The approaching band stops several hundred yards off and messengers are sent out to arrange a meeting. When agreement is reached the visiting band enters the camp, the visiting chief kneels on one knee and holding his bow and arrows above his head with his right hand he makes a speech extolling the hosts and their goods and depreciating the things which his band has brought. The host then makes a similar speech, and trading begins.

Important items are traded by the two chiefs representing their respective bands, while small items can be exchanged by individual owners. In all cases, however, the technique of trading is the same. If an individual wants an object he extolls it by saying how fine it is. If a man values an object and wants much in exchange for it, instead of saying that it is very valuable he says that it is no good, thus showing his desire to keep it. "This ax is no good, it is very old, it is very dull," he will say, referring to his ax which the other wants. This argument is carried on in an angry tone of voice until a settlement is reached. When agreement has been reached each snatches the object out of the other's hand. If a man has bartered a necklace, instead of taking it off and handing it over, the other person must take if off with a show of force. Disputes, often leading to fights, occur when one party is a little premature and snatches the object before the other has finished arguing. The term "boca forte" (strong mouth) applies particularly to trading, for a man with a strong mouth gets what he wants and convinces the other that he, too, has made a good bargain. This method of trading contrasts sharply with that practiced among the Upper Xingú tribes where each party places a pile of goods opposite the article he wants, usually without saying a word. If agreement is not reached, each one eventually withdraws his goods.

After a satisfactory exchange of goods the two bands go hunting and prepare a quantity of food and dance as long as the food lasts. During these meetings marriages are sometimes arranged, but more often, when leaving, some strong man will try to steal the wife of some other man. If a fight should occur in which one man is killed the winner will take not only his wife or wives but his children and property as well.

Rev. L. W. Buckman gave the following account which reveals something of the tension between the bands. In 1937, the Kitânhlu band met a small group of Chiwâisu out hunting and attempted to trade with them. As the Chiwâisu were the smaller group, the Kitânhlu evidently tried to rob them. In the fight several Chiwâisu were killed. These bands did not meet again until 1941, but the Chiwâisu prowled around the Kitânhlu camp stealing what they could and trying to revenge their fallen comrades. In 1941, both bands happened to meet in Campos Novos, and the old quarrel was renewed. In the Chiwâisu camp there was a child which had been born to a Kitânhlu woman married to a Chiwâisu. A Kitânhlu took the child away by force saying that it belonged to his band. The Chiwâisu retaliated by shooting down a Kitânhlu. A fight followed in which the Chiwâisu were driven out after losing several of their band. For several years the Chiwâisu remained away and were attacked by the Salâunsu, a wild tribe living to the north of the Nambicuara. In the last few years, a temporary peace has been arranged by the Chiwâisu bringing presents of wax and honey to the Kitânhlu.

Except at telegraph stations, mission stations, and at the two Indian Posts, the Nambicuara have few contacts with their neighbors, the Paressí and Iranxe. The Paressí consider the Nambicuara as their inferiors, and, as far as is known, the two peoples do not intermarry. The Iranxe hold themselves aloof from both tribes.

The efforts of the Serviço de Proteção aos Indios to improve the lot of the Nambicuara have not been very successful. Part of this lack of success is, no doubt, due to the poor agricultural possibilities in the region. The Tolosa Post is situated in a barren region where it is difficult to grow sufficient food to maintain more than two or three families. The Nambicuara visit Tolosa, but after the food supply is consumed they move on. The other factor which makes it difficult to settle the Nambicuara in permanent villages is that they are hunters and shifting agriculturists. Lack of good agricultural land does not altogether explain this nomadic pattern of existence. Like the Caduveo who have excellent farming land the Nambicuara persist in continuing their traditional form of economy.

In contrast to the Paressí, who have become satisfactory employees of telegraph stations, mining camps, and mission stations, the Nambicuara only work for the white man when they want an ax, a knife, a gun, or some article of clothing, and once they obtain what they want they wander off. Miners particularly are bitter about the fact that the Nambicuara are unreliable workers.

Missionary activity, which has been carried on intensively by both Protestants and Catholics for about 20 years, has been singularly unsuccessful in Christianizing the Nambicuara. The Jesuit priests informed me that only those individuals who have been taken to Diamantino as children and kept there can be said to understand the rudiments of Christianity. The hope is that eventually these individuals can be brought back to the tribe and through their influence their children will be raised as Christians. The Protestants tell the same story. The Indians remain around the mission stations, participate in prayer meetings, and perform little tasks for which they are compensated but they soon become bored and wander off. The Rev. L. W. Buckman told me that he raised a Nambicuara boy at the station and believed that he would remain, but one day the boy got married, left with his wife, and took up the old wandering pagan form of life. None of the Waklítisu band are considered Christians. When Marciano died a few days before I left he was buried according to Indian custom, both Protestant and Catholic missionaries participating in the burial as onlookers. Among this band which has had as much missionary contact as any, there was not a single individual who could speak or read Portuguese. Some of the men, as has been mentioned, used a form of pidgin Portuguese as a means of communicating with their white neighbors.

The attitude of the Nambicuara toward the white man is not only one of suspicion and sullen resentment, but one of disdain. They call white people "civilisados" or sometimes "bean eaters." A Nambicuara feels insulted if these terms are applied to himself. He openly boasts of being a "bugre," a slang term widely applied to Indians in Brazil which signifies a sodomite or heathen. While all other Indians that I have met in Mato Grosso objected to this term when it was applied to them, the Nambicuara always use it when talking about themselves. Julio informed me that the Nambicuara always get sick when they visit white people. The missionaries confirmed this fact but added that the Nambicuara have now become dependent upon the whites for metal tools, guns and ammunition, and feel it necessary to visit white settlements. The Nambicuara are not above visiting white men for treatment of injuries and cases of severe illness.

The interband relationships of the Eastern Nambicuara, although characterized by tensions and periodic open conflicts, are based on a recognition of common origin, common speech, and a degree of intercourse through trade, marriage, and the performance of dances in common. The relations with the so-called wild tribes to the north, on the other hand, are based on war, not just on raiding for loot and women, but on a war of extermination. Although the bands south of the telegraph line no longer participate in war, the bands north of the line still fight on occasion with their enemies which they call the Saláunsu and which the whites call the Beiço de Pau.

When preparing for a war the chief of the band takes the men into the woods and tells them that there are bad people to the north which they must kill. Then after singing a war song they set about making many arrows and war clubs. The night before the attack they camp near the village of the enemy. The men paint their bodies with the sap of some latex tree and their faces with urucú and charcoal. They then take leaves and stuff them into any holes in the ground or in trees around their camp. After all the holes are stopped up, they take the skin of an anteater, the skin of a toad, and the leaves of a tree, which are used in preventing rain, and burn them. The stopping of the holes is believed to prevent the enemy from hearing them, the smoke is to blind the enemy's *anúnsu* and, also, to make the enemy sleep soundly. The chief remains at this spot and sings all night with the shamans. At dawn the young men approach the huts of the enemy, stand in the doorways and shout, and when the occupants awaken they are shot down or clubbed. No one is spared. They then take whatever they can, burn the houses, and return to the chief and his singing shamans where the loot is distributed among the warriors.

The internal organization of the band is based upon kinship and is perpetuated through cross-cousin marriage. One belongs to the band of his or her mother. Julio explained that when the daughter of the wife whom he abducted from the Elótasu reaches puberty she will return to the

Elótasu band. This is the custom among all the Eastern Nambicuara bands.

The kinship terminology belongs to the bifurcate merging type. The term *tayántasu* (grandfather) and the term *quatahâinisu* (grandmother) are extended to the brothers and sisters of one's grandparents. The term *awínisu* (father) and the term *ahakínisu* (mother) are extended to father's brother and mother's sister, respectively. Father's sister is termed *ahaínusu* and mother's brother *asúnusu*. A man calls his older brother *akanánusu*, his younger brother *dawáidnisu*, and his sisters *awádnasu*, these terms being extended to parallel cousins. The terms for son (*akiráru*) and daughter (*akenéru*) are extended to the children of a man whom ego calls brother. The terms for sister's son and daughter are *asuétu* and *asíntu*, respectively, these terms being extended to the children of anyone whom ego calls sister. The term for male cross cousin is *asúkisu* and that for female cross cousin, *dazésu*. There is just one term for grandchildren, *quatasáiserawa*.

The only affinal kinship terms which we could obtain were the terms wife (*azésu*) which bears a close relationship to female cross cousin; husband (*amezáisu*); and the terms for father-in-law (*asúnusu*), and mother-in-law (*ahaínusu*), which are identical to the terms for mother's brother and father's sister. Whether women employ different kinship terms was not ascertained owing to the fact that the women refused to discuss the matter and the male informants persisted in going to sleep when the subject was broached.

The kinship terminology supports the statement made by the Nambicuara that cross-cousin marriage is preferred. Excepting one Elótasu woman all the wives in Julio's band were Waklítisu and cross cousins of their husbands. At the death of the husband the wife and children pass to the deceased husband's brother. Women sometimes marry their mother's brothers. Residence is patrilocal although when marrying a woman from another band, the man sometimes remains with his wife's band for a while. Band membership, as has been stated, is determined by matrilineal descent.

The powers of the chief are limited to leadership in such activities as hunting, planting, trade, and ceremonies. Raids, although organized by the chief, are not led by him. The chief admonishes quarrelsome individuals but appears to have no powers of coercion. The Waklítisu claim that individuals quarrel but they do not fight among themselves nor do they remember any cases of murder. Unwanted individuals are exiled by common agreement. Houses, fields, and some implements are common property, and food is shared among the members of the band. Axes, machetes, and knives, although owned by individuals are freely used by other members. At death, privately owned tools pass to a man's sons or to his brother. The bow is customarily broken and left on the grave. Even these rules are not strictly adhered to, for when a man becomes seriously ill other men begin to help themselves to his property and the one with the "strongest mouth" gets the most. If the man recovers he cannot reclaim his things but must set about accumulating a new supply.

The wife and the children are under the strict control of the husband. Although boys must obey their fathers they owe no special obedience to their mothers. Boys sometimes throw stones and sticks at their mothers and the old women; the older men not only laugh but even encourage this disobedience. The bond between brothers is very close. On occasion they share each other's wives. No particular respect is paid to in-laws.

RELIGIOUS BELIEFS AND PRACTICES

According to the Waklítisu the spirits are the source of all danger, misfortune, sickness, and death. The ghosts of the dead (*ayánkadisu*), bring sickness unless offerings of food are made to them. The ghosts of dead shamans (*anúnsu*), belonging to other bands bring thunderstorms which destroy gardens and make hunting difficult. In addition to the ghosts, there is *tauptú*, the hawk of death who lives in the sky, and *ulurú*, the evil armadillo who lives under the ground and wants to destroy the villages and camps of the Nambicuara.

Tauptú is an enormous hawk with huge wings, tail, and claws, who sits in a tree made of human bones. This tree (*lúlukatsu*) is situated on the shore of a shallow lake in the sky. Shooting stars are caused by *tauptú* defecating at night. A small red bird (*dinínuwa*), who lives with *tauptú*, urinates into the lake and when it fills up the urine overflows and comes down in the form of rain.

Tauptú does not cause illness, but when people get sick he begins to eat away the flesh and finally kills them and eventually takes their bones to his abode in the sky. The missionaries told me that when the first airplane appeared in Nambicuara territory the Indians ran into the forest and hid because they believed the airplane was *tauptú.* Shamans sometimes visit the land of *tauptú* by riding up to the sky on the back of *urutai,* the night hawk or goat sucker. Julio claimed that his father-in-law, who was a powerful shaman, had visited the realm of *tauptú* while in a trance.

The Waklítisu fear most of all the spirit armadillo called *ulurú.* When someone sees bits of manioc cake and charcoal floating on the river near the village, he comes back and tells the shaman, who then goes to examine the signs. If the shaman decides that it is *ulurú,* immediate action must be taken to save the world from destruction. The women and children shut themselves in their huts while the men take their wooden sword clubs (*hulúkisu*) and go to the bank of the river. The shaman then digs a deep hole in the bank, into which he is lowered with a rope. When he has grasped *ulurú* by the tail he signals the men on the surface to pull him out. The shaman remains at the mouth of the hole with his arm thrust in, holding *ulurú* by the tail while with his other hand he marks points on the ground which are directly over the head, heart, and stomach of *ulurú.* One by one the men thrust their sword clubs into the ground at the places marked by the shaman. As they push the blades in they twist them to make sure that they kill *ulurú.* After the spirit armadillo has been killed, the men go back to the village leaving the shaman alone with the dead *ulurú.* The shaman then cuts up the spirit armadillo, washes the pieces in the river, and begins to sing. When the ghosts of the dead Nambicuara hear the song they come and eat the pieces prepared by the shaman, after which they go away happy because the Nambicuara have been saved.

The Waklítisu say that if they should ever fail to kill *ulurú,* a terrific storm would appear followed by an earthquake, for when *ulurú* gets under the village he will turn the world upside down, *tauptú* will fall down from the sky, and the Nambicuara will be buried again. In short, they will go back under the ground from where *oklihåitlisu,* the culture hero, once released them. They add that they expect this to happen some day.

The man who is responsible for guarding the band against evil spirits is the shaman (*waníngidisu*). In this task he is assisted by the ghosts of dead shamans of his own band. The spirit or ghost of a dead shaman is known as *anúnsu* and is sharply distinguished from the ghosts of non-shamans (*ayánkadisu*). The *anúnsu* of other bands, however, are considered evil for they bring thunderstorms. When speaking about shamans and shaman spirits in Portuguese, the Nambicuara refer to both as "trovão" (thunder). This has led many observers to the conclusion that the Nambicuara believe in a thunder spirit. Among the Waklítisu, at least, "trovão" or thunder is nothing more than a shaman or a shaman spirit. Actual thunder, which is caused by a shaman spirit is called *tlíditu.* A shaman spirit may also enter the body of a jaguar (*yenáru*), and cause harm to people.

The Nambicuara do not like heavy and prolonged rainstorms, for they say that the winds blow down their houses, the lightning sometimes kills people, and the rains wash away the tracks so that they and their dogs have difficulty in following game. To pacify the evil *anúnsu,* who has caused the storm, the shaman makes a cigar-shaped bundle (*yakúdenánsu*) out of certain dry leaves, which he ties with cotton twine, leaving long tails at each end. When he wants to stop the rain he lights one end of the bundle, and as it begins to smoke he waves it in the direction of the storm, telling the rain to go away. "Go away, go away, don't be angry at me," he says as he waves the bundle four times. If this does not stop the rain the shaman takes the sword club (*halúnkisu*), which appears to have magical powers, and cuts the rain. If the rain still persists, he lights three smudges made by mixing "para toda" leaves with the *yakúndenánsu* leaves. When the smoke rises from the smudges he takes a burning brand and waves it against the storm telling it to stop.

The shamans of one band also practice sorcery against individuals in another band by asking their *anúnsu* to inject objects into their bodies. When a shaman wishes to inject an object into his enemy he retires into a special hut (*sihántsu*) and by singing calls his *anúnsu,* who eventually comes up out of the ground in front of him. The *anúnsu* may be in the form of a bird or a jaguar, but is very small in size. The shaman wears a hat made from a jaguar skin and a necklace made from jaguar claws and teeth. The shaman offers the hat and the necklace to his *anúnsu* if he will do his bidding. If the *anúnsu* is satisfied with the singing and the decorations he will carry out the shaman's orders. The procedure followed in curing an individual who has been made ill by sorcery is much the same. The shaman calls his *anúnsu* by singing and asks that he help him draw out the object. The *anúnsu* enters the shaman, who then sucks out the dangerous object. In mild cases the shaman draws out bamboo slivers, but in cases of severe illness he draws out the bones of fish or the entrails of birds.

The ghosts of the dead (*ayánkadisu*) who live around the stone mountain from which the Nambicuara came, periodically come to the villages and camps asking for food. They are not dangerous if they are well-treated. When the shaman says that the *ayánkadisu* are around, the people prepare manioc cakes, roast ears of maize, and broil meat. They then gather around the shaman and sing together with the ghosts. The shaman thanks the ghosts for their singing and they finally go away. If the ghosts are dissatisfied with the offerings and the singing they become angry and make the children ill. To cure the children, a more elaborate feast has to be prepared for the ghosts.

In every case, contact with the ghosts of the dead or with the spirits of dead shamans is made through singing. The Waklítisu do not use tobacco, drums, or rattles to communicate with the supernatural. One becomes a shaman when he hears the song of an *anúnsu,* which he later uses whenever he wishes to contact his spirit helper. Everyone in the band appears to know the songs which bring the *ayánkadisu.* Shamans practice continence before important rites, for if the *anúnsu* observe sexual intercourse they become angry and take away all the cotton from the bushes.

In addition to treating illness through shamanistic practices, the Nambicuara resort to more practical methods. They brew herbs, the juice of which is later poured over the head or stomach of a patient. The juice of a certain plant is put into the cavities of teeth to stop toothache. The juice of boiled roots and leaves are taken internally for stomach disorders. One day I observed a woman pressing her foot over her husband's forehead as he lay on the ground. The heel was placed over the eye and she exerted considerable pressure. She was doing this to cure her husband's headache. These nonmagical practices are known to everyone. Some herbal medicines, however, are known only to the shamans and are used under the directions of the *anúnsu.*

The sacred flutes (*wáinrhu*) are associated with *okliháitlisu,* the culture hero, agriculture, and chieftainship. As these flutes are similar in appearance to the sacred flutes of the Paressí, among whom they have great significance, it is possible that the Nambicuara obtained them originally from the Paressí. The flutes are about 2 feet long with four holes at the lower end and are made from a jointless piece of bamboo. When the band settles down near their manioc fields they build a special hut for the flutes, but when they are wandering around, the flutes are hidden in the woods. Women are not permitted to see the flutes, and if one should accidently see them her stomach would swell and she would become ill. But what appears more important is the fact that the flutes poison people who do not treat them well. Yet, as only the chief and the head shamans play them this would mean that the flutes are the symbols of authority representing the men in whom power is invested. The flutes, four of which should be in every band, do not represent a spirit but appear to be more like fetishes. Boiled manioc juice is poured into them and they are offered maize and broiled meat.

The *wáinrhu* are played after the fields have been planted and again at harvest time. After planting, the men gather into the flute hut and play the flutes and sing the *weiyánsu.* The ghosts of the dead participate and, along with the flutes, are offered food and drink. At harvest time another ceremony called *haikánakídutsu* is performed at night during which the flutes are played and special songs are sung. The following day the whole band participates in a dance. The ghosts also take part in this ceremony.

In addition to the *wáinrhu* flutes, the Nambicuara have a smaller four-stop bamboo flute called *kadínsu*, the nose flute, *maitétansu*, and the five-tube panpipe, *dútu.* The nose flute which is about 4 inches in diameter is made by sticking two round pieces of gourd together with rosin. Three holes are made on one side, two holes providing finger stops, while air from one nostril is blown across the other. These flutes do not appear to have any ritual significance.

In reviewing the religious symbolism of the Nambicuara it appears that the following conclusions can be drawn. The *oklihǽitlisu* myth explains the origin of the Eastern Nambicuara and their rights to the territory which they now occupy. *Tauptú*, although not the cause of illness, explains why people die. *Tauptú* and *dihnínuwa* also account for the existence of shooting stars and the presence of rain. *Ulurú* appears to represent the ever-present forces of destruction inherent in the physical environment. Within the framework of these ultimate forces the Nambicuara carry on their struggle for existence assisted by and opposed by the members of their own kind. The security of the band depends upon the close cooperation of the kinsmen acting under the guidance of the chief. The *wáinrhu* flutes provide a supernatural sanction for the powers of the chief and thus help in enforcing and maintaining band solidarity. The flutes, furthermore, are a symbol of the common ancestry of the Eastern Nambicuara in that they relate the bands to the culture hero. The ghosts of the ancestors (*ayánkadisu*), like the living members of the band, must be well-treated in order to avoid danger to children and the perpetuation of the band.

But actual day-to-day danger to the individual comes from the members of other bands. Disputes over women and quarrels arising from the exchange of goods, as we have seen, lead to bloodshed and death. In the ultimate analysis each band defends itself as a sovereign unit by force. The danger arising from the constant tension and suspicion between the bands is symbolized by the *anúnsu* who bring illness, who create the storms which destroy the houses and fields, and who threaten the band with starvation by making hunting difficult. As direct attack by other bands is met with the physical forces of the band, so spiritual attack by the *anúnsu* of other bands is met by the assistance of one's own *anúnsu.* They help the shamans to draw out the evil objects which cause sickness, they have given the magical herbs whose smoke blinds the dangerous *anúnsu*, and the techniques which will drive away the storms. Thus the shaman operating on a symbolic level continues the struggle for survival which has been defined for the Nambicuara by the nature of their adjustment to their physical environment and their relationships to one another.

THE LIFE CYCLE

BIRTH

The Nambicuara recognize sexual intercourse (*winsúenditsu*) as the cause of pregnancy (*halájitsu*). This act takes place in the woods while the husband and wife are out hunting or collecting, for it is considered improper to have sexual intercourse in public, even at night around the common camp fire. If a shaman should see a couple in sexual embrace while practicing his rites it would spoil his power. Although shamans use a special hut when calling their *anúnsu* there is always a chance that they may see a couple in the sexual act, so every effort must be made to avoid this danger. Shamans themselves abstain from sexual intercourse for 2 or 3 days before getting in contact with the spirits.

There appear to be no food taboos surrounding pregnancy among the Waklítisu. The husband continues hunting and collecting as usual, but he must avoid working too hard in the field for fear of causing his wife to abort. Women do not practice abortion, and the Nambicuara did not mention any medicines used for this purpose. Honey is considered conducive to sexual vigor and is used by young couples. Childless marriages are attributed to sterility in women, and a man may abandon his wife for this reason.

Birth takes place in the house, or in the camp if the family is out hunting. Just before expecting the birth of a child the expectant mother drinks the juice of certain herbs which are believed to facilitate birth. The husband and two older women assist in the delivery. The woman kneels on the ground and is supported by her husband. The umbilical cord is tied with a certain vine and then cut with a bamboo sliver. Among the Kitânrhu it is bitten off by one of the midwives. The placenta is buried at the place of birth and when the umbilical cord dries and falls off, it, too, is buried in the camp. The child is bathed, and tiny washers made of tucum nut hull are placed on its ear lobes. The washer or ring is cut on an angle so that the two points eventually press through the lobe creating a hole. As the child grows, new washers are added. After a few weeks the child is given a beaded necklace, but it is not named, being known only as the child of so-and-sc until puberty, when it receives a name. The Waklítisu appear to have no avoidances following the birth of a child, although the Kitánrhu are said to practice a modified form of couvade. Twins are accepted with satisfaction. Illegitimate children are likewise accepted and are cared for by the girl's parents until she marries. No stigma appears to be attached to an unmarried mother; however, this attitude may be a recent development. Crippled or malformed babies are not killed, but usually die shortly after birth.

Children are nursed until they are 2 or 3 years old or until another child is born. Women in the band assist one another in nursing and taking care of the infants. If a woman should have two small infants, another woman who has lost her child will nurse one of them. Small children are carried on the hip of the mother, sitting on a strap which passes over the opposite shoulder of the mother. This strap which is made from embira bark or woven cotton is about 4 inches in width. Women evidently are accustomed to carrying heavy loads, for on many occasions the tiny women were observed carrying not only their child but also a huge burden basket full of firewood. When the child gets a few teeth it begins to chew on a piece of broiled meat. One morning while Kaoro and I were debating what to do with a rat which we had caught in a box trap the night before, neither of us having the courage to put our hand in the box, one of the missionaries suggested we give it to the Nambicuara. Kaoro then carried the box over to Julio's camp and gave it to one of his wives. Without any hesitation the woman put her hand in the box, pulled out the rat, banged its head on the box, and threw it on the coals of her fire. After the hair had been partially singed off she pulled it out, cut off its tail with her thumb nail, and gave it to her cowife's baby, who began sucking on it as if it had been a piece of candy. Then with her thumb nail she opened the rat and threw the viscera and the rat on the coals. Within 15 minutes that rat was eaten, entrails and all, while Kaoro and I looked on in a state of horrified fascination. Children thus begin by eating broiled meat and fish; pieces of sour, gritty manioc cake are given to them at a more advanced age.

PUBERTY

When a boy reaches the age ot 14 or 15 he has his upper lip and the septum of his nose pierced with a sharpened fibula of a monkey ("macaco-prego"). One man holds the boy's arms, another his head, while an older male relative performs the piercing. Small plugs of bamboo are then placed in the holes. The following night the shaman leads the band in singing and dancing. Food is prepared in large quantities and offerings are made to the ghosts who are believed to be present at the ceremony. The boy is now given a name which he will keep throughout his life. If the boy's father is dead he will use his father's name. If the father is alive he will use the name of some dead member in his grandfather's generation. In this way names are passed from one generation to another. An important part of the boy's puberty ceremony is the ritual beating administered by the old men of the band. He is now permitted to take part in the singing and can be present when the sacred flutes are played in the flute hut. Although this creates an attitude of obedience to the older men, he still continues to be abusive toward the women of the band. His unmarried female cross cousins now begin to notice him and openly show their desire to go hunting with him.

The puberty ceremony for girls is much more elaborate. After a girl has her first menses her father builds a small hut in the center of the camp, in which the girl is secluded. She must remain in this hut day and night and is attended by her female relatives. The chief then calls all members of the band together, even sending messengers to distant hunting parties. When the band is united the chief organizes a hunt in which all the men take part, and they must remain away from the camp until the moon is full. While on the hunt they accumulate a great quantity of smoked meat. When the moon is full, the men send a messenger to the camp to whom the women give some of the baked manioc and other food which they have been preparing. When the messenger leaves with the food it is a sign that the men will return to camp after sunset.

Before the men arrive the women wash the girl and paint her with a mixture which includes latex from the rubber tree. A series of dots are painted on her face, breasts, abdomen, and thighs (pl. 6, *c* and *d*). When the men come in they dance in front of the girl's hut. She then comes out and is given a name and everyone tries to give her a necklace or some other object. During the night men and women join in the dance, holding hands and dancing in a circle, the dance steps being stamped out with the right foot in the direction in which the circle is moving. A special puberty song is also sung.

The Nambicuara tell of a strange medicine known only to the shamans which is given to girls during the puberty ceremony. It is a blue liquid which, when taken internally, stops menstrual bleeding for the remainder of the girl's life. The Waklítisu claim that they do not use it but that the other Eastern Nambicuara band do. The missionaries informed me that the Kitânrhu use this medicine, and the missionaries seemed to think that it was effective.

MARRIAGE

There is no special marriage ceremony, for when young people go through the puberty rites they are ready for marriage and a mate is selected for them by their parents. The young man, who is to become the husband of a girl just out of seclusion, goes to her parents and helps his future father-in-law build a small hut, and when it is finished the young man tells the girl to come out hunting with him. She takes a burden basket and they go off into the woods. In the afternoon the man builds a fire and tells the girl to prepare some food and honey. After the food has been eaten he tells the girl to come and lie beside him near the fire. She is supposed to resist and he takes a stick and threatens her. He then has sexual intercourse with her, and when they come back to camp that night they are accepted as a married couple. When wives are acquired by inheriting the widow of a brother or by abduction from other bands, no ceremony is held.

BURIAL

When it is seen that a person is about to die the women wail for a while and then they all turn their backs to the dying person and begin to divide up his belongings. The corpse is buried in a grave dug in the village or camp site. The men loosen the soil with sticks and scoop out the soil with gourds until a roughly rectangular grave about 5 feet deep is dug. The men who lower the body into the grave take three balls of soil from the bottom of the grave with which they rub their legs and backs. A man's decorations are placed in the grave with him. In the case of a woman, two or three gourds are placed at her feet. The grave is then covered. A man's bow and arrows are broken and left on the grave. The rest of his belongings are burnt nearby and the people go on a hunt for a few days. A bit of burití fiber is left to mark the grave of a boy, although nothing appears to be left over the grave of a woman or a girl.

The ghost remains around the grave for several days and then goes to the sacred mountain where all the ghosts live. In the land of the dead the ghosts have fine necklaces, and nose feathers, and are always painted with urucú. But they do not wish to be forgotten and want the living to give them food. The Nambicuara do not fear ghosts, and like to have them participate in their ceremonies.

Two days before we left Utiarity, Marciano died. He was one of our best informants, the least morose and most helpful. A week earlier he caught cold which turned into pneumonia. It was pitiful to watch this naked man lying in the dirt beside a fire slowly gasping out his life. Once in a while he became conscious and tried to sing, calling the spirits to help him. About 9:30 that night he died. As there is something symbolic in his death and burial I would like to end this account of the Nambicuara with an entry from my diary dated July 30, 1949.

> This morning we all went to the burial, the Jesuit priests, the Protestant missionaries, some of the Brazilians, and Kaoro and I. We dug a grave at an old Nambicuara camp site about a half a mile from Utiarity. As we walked along the telegraph line bearing Marciano's body the sabiá were singing and the air was full of the sweet odor of the timbó vine. Wrapped in a ragged blanket Marciano was lowered into his grave along with his

necklace and a few rusty cans, the grave was covered, and there we left him a few feet from the grave of his first wife who had died in the measles epidemic four years before. Then Julio, the chief, told all his people to gather around the grave and as he walked around it he told Marciano that here he had water and sunshine, and that after a few days he would be with the ancestors around the stone mountain at Juruena. The white men had not a word to say. It seemed that we were not burying just an Indian but a race, older and more simple in its way of life than its Arawak- and Carib-speaking neighbors. And the telegraph line beneath which Marciano rests is the symbol of all those forces which destroyed him and are slowly destroying his brothers.

THE UMOTINA

THE PEOPLE AND THEIR HABITAT

The Umotina, who call themselves the Balorié, are settled today in the Indian Post of Fraternidade Indigena near Barra do Bugre on the Paraguay River west of Cuiabá. Before coming to the Post they occupied a village at Tira Santida just below Tres Barras. The Umotina, who today number about 65, are related linguistically to the Bororo who live directly to the east of them. In two respects, at least, they differ sharply from their neighbors—they have a pure Hawaiian-type kinship system and are pronouncedly dolichocephalic. The local Brazilians call them the Barbados, owing to their beardedness.

In the old days the village (*mukímo*) was built on the bank of a river and consisted of two rows of houses separated by a narrow plaza. The house (*ishipá*) was rectangular with a gabled roof coming down to the ground, the whole being covered with pacova palm fronds except the two ends which were left open. This house type is the same as that formerly found among the Guató who live to the south of the Umotina. Each family had its own house, the occupants sleeping on mats spread on the ground. The husband kept a fire going all night not only for warmth but also to drive away the mosquitoes.

In the past men wore no clothes but after puberty used a penis sheath (*bakyotókwa*) made from a burití palm leaf. The foreskin was pulled over the glans, and the leaf was wound around it and fastened with twine, the purpose being to hide the end of the penis from the women. Men wore their hair long, tied in a knot at the back of their heads, and allowed their beards to grow; but eyebrows, eyelashes, and pubic hair were plucked out. The lobes of the ears and the lower lip were pierced. Women, on the other hand, cut their hair short, and plucked out their eyebrows and eyelashes but not their pubic hair. Women wore a knee-length skirt (*imetá*) made from woven cotton. Like the men, the women had their ear lobes pierced.

The principal ornaments used by men consisted of beautifully made feather ear pendants (*imitúta*) about 6 inches long, jaguar-teeth necklaces (*okopó*), necklaces made from human hair (*pasovó*), and cotton arm bands worn above the biceps. A short bamboo lip plug was worn in the lower lip. A crude comb, *putúka*, was made by binding together with human hair four siriva wood spikes about 5 inches in length. During dances the men fastened rattles made from tapir and peccary hoofs to their ankles. Women wore feather ear pendants and "store"-bead necklaces. Some of these ornaments are still worn by the old men.

ECONOMICS

AGRICULTURE

The traditional food crops of the Umotina included such plants as bitter manioc (*otuíyo*), sweet manioc (*otuíyo biboróno*), maize (*omatáka*), black and red beans (*dumatáka*), sweetpotatoes (*balarkúpo*), and cará (*tapatúku*). In addition, they cultivated gourds (*poári*), cotton (*akyámani*), and urucú (*nodókahírika*). Tobacco was not grown, as the Umotina did not smoke in the past. The food supply was further augmented by the collection of a wide variety of roots, nuts, and fruits, including the piqui (*heír*), mangaba (*batorúkwa*), and the "marmelo" (quince, *hashorúkwa*). Honey (*psíru*), was considered a delicacy and collected particularly before ceremonies.

Fields were cleared in the forest, but instead of felling the large trees, the branches were trimmed off in order to let in the sunlight. The undergrowth was beaten down with a wooden sword club (*ántho*) made from the wood of the siriva palm. In September the dry cut-over was burnt, and with the use of only a digging stick (*tápu*), the planting began. Maize was planted first; three or four seeds were put into a hole about 6 inches deep in order to protect them from birds. Manioc was planted by putting two pieces of stalk into a hole prepared with a digging stick. The field was weeded about a month later, after which the people went hunting and fishing. Only men did the field work, clearing the field together, but each family head planted his part of the field. If the crops did not grow well the ghosts were asked to cure the field.

Bitter manioc was prepared for food in two ways. First, unpeeled tubers were left to soak in water for 2 days, then squeezed in a strip of bast or a piece of cotton cloth. After the skins and fibers were picked out the pulp was rolled into balls and dried. The dry balls were later ground in a mortar, and the meal was sifted in a circular burití fiber sieve and stored in baskets. When a woman wished to bake she placed some of the meal in a shallow pot, dampened it with water, and placed it on the fire to produce *jukupóto,* "beizhú." By the second method they produced chicha (*zumima*). The tubers were peeled and grated, and the pulp, mixed with water, was boiled for several hours until it formed a thick paste. This preparation was eaten when cooled. Sweetpotatoes and maize were roasted; and fish and meat were broiled over a babracot.

HUNTING AND FISHING

The siriva palm wood bow (*boíka*) is used in fishing and hunting, and formerly it was used in war. Umotina bows ranged from 5 to 7 feet in length, 2 inches in width, and an inch in thickness in the middle. In cross section the bow is oval, often somewhat more flat on the inner side. Siriva wood is black with white streaks, but with age and polishing the bow turns jet black. Slight shoulders are notched at each end to hold the bowstring (*boíko*) made from tucum fiber, the extra length being wound above the handhold. The 5-foot arrow (*ísho*) is made by fixing a notched canela or siriva foreshaft to a taquara shaft. This point is used for fish and small game. Bamboo points are used for big game such as tapir, jaguar, and peccary. All arrows excepting those used in fishing are feathered with urubú or mutúm feathers. A feather about 8 inches long is split and the halves are fastened to the arrow with twine lashings about one-eighth inch apart, which are then covered with pitch.

Fish were shot from the banks and, in shallow pools, were drugged with timbó. Women used a cast net fastened to an oval hoop (*búkye*) for catching small fish after they were drugged. Men hunted all the local game singly or in groups, but in former times did not use dogs.

Women make pots (*porikupú*) of various sizes, all shaped like half of an egg shell. Both men and women make baskets of two types. One, shaped like the pots, called *kothodókwa,* is an openwork burden basket about 24 inches high and 16 inches across at the top and is made from aguasu palm leaves. The other, which is in fact a bag, is made from the cortex of burití palm fronds. This bag (*yethabótho*) is used for storing feathers, twine, and ornaments. Men weave the sleeping mats from the same material used for making the burden baskets. Women spin cotton, using the spindle (*hálaka*) spun on the ground. Cotton materials are woven by women on an upright loom (*ipokápa*).

SOCIAL ORGANIZATION

In the past the chief (*hutorikána*) was not only an economic and ceremonial leader but a war leader as well. Although the son of the chief had a right to succeed his father, the actual decision was made by all the men in council. The Umotina say that they used to fight with a tribe called Abusé that lived to the north of them and with white men. When the chief decided on a raid he blew his horn (*ipóna*) made from the shell of an armadillo. The men then made arrows and war clubs, and just before attacking they painted themselves black with genipapo and glued feathers on their temples. The Umotina used a shield made by stretching tapir skin on a square wooden frame, and they poisoned their arrows. When attacking they killed the men but sometimes kept some of the younger women. They cut off the heads of their enemies and used the teeth to make necklaces. The heads of white men were boiled and eaten.

The kinship system of the Umotina is of the Hawaiian type. In the grandparents generation there are terms for grandfather (*iyokomishína*) and grandmother (*imakomishóto*) which are extended to the siblings of the grandparents. In the parental generation there are just two terms, father (*iyóko*) the term being extended to cover father's brothers and mother's brothers, and the term mother (*imáko*) which is extended to cover mother's sisters and father's sisters. In ego's generation there are terms for brother (*amána*) and sister (*ashimbê*) which are extended to both parallel and cross cousins. Distinctions are made for younger and older sibling. Only one term is used for designating one's own children, brother's and sister's children, as well as grandchildren, *manundó*. (See chart 12.)

An individual is prohibited from marrying parallel and cross cousins but beyond this restriction he is permitted to marry into any of the other families. After marriage a young man lives with his wife's family until his father-in-law dies. He then builds a house near his own brothers. During his stay with his wife's family he obeys his father-in-law as if he were his own father. There appear to be no father- or mother-in-law taboos. Disputes between the families were settled by the chief who forced wrongdoers to make payments to the injured parties.

RELIGIOUS BELIEFS AND PRACTICES

MYTHS

One day some ripe figs fell from the fig tree and out of one of these figs came *Aípuku*, the first man in the world. He woke up suddenly and walked around. He was lonely and thought a long time about what to do. Then he picked up four figs and placed them in a row on the ground and walked away. He heard voices, and when he came back the figs had turned into human beings, two men and two women. One of these was *Barabêla* whom he married; the others went away.

Then *Aípuku* made the ancestors of many Indian tribes. He took macaba palm nuts and set them in a row; from these nuts came the Umotina—the men came from the long nuts and the women from the short nuts. He made skirts for the women and gave each man a bow and some arrows, told them where to live, and gave each one a name. These people married and are the ancestors of the Umotina. Then he made many other Indian tribes, using the fruit of the mangaba and the berries of the bauwi tree.

One day *Barabêla* asked *Aípuku* what was wrong with his legs. He looked down and noticed that the calves of his legs were sore and swollen. They kept swelling until they burst open. Out of one calf came the white men (*uwasê*), and out of the other, the *abusê*, or enemy Indian tribes. *Aípuku* then made holes in the ears of the *abusê*, but the *uwasê* refused to have their ears pierced. He then asked them to live with him, but they refused. The *abusê* went north, and the *uwasê* went south. *Aípuku* was sad because his children disobeyed him. It is interesting to note that the *abusê* and *uwasê*, who were the traditional enemies of the Umotina, came from the sores in *Aípuku's* legs, were unasked for, and were disobedient. After creating all the people, *Aípuku* and his wife left.

In the old days the Umotina did not have maize. One day when a woman was out in the woods collecting she found some sucurí (anaconda) eggs. She thought that they were birds' eggs and put them in the basket which she carried on her back. The eggs broke, leaked down her back and into her womb. She became pregnant and gave birth to a snake. She liked the snake very much because it was her child and could talk. In order to hide it from her sons she let the snake go into her womb. One day, however, the sons saw the snake as it went up into a burití tree to collect nuts. They asked their mother who it was. At first the woman denied seeing it, but her sons insisted. Finally she said it was her son. The boys were very angry and said they would kill the snake when they saw it again. The snake heard this while he was hiding in the woman's womb. For a long time the woman carried the snake in her womb but one day it came out and went into the woods to collect burití nuts. The woman's sons saw it, killed it, and cut it into pieces. The mother went into the woods and cried when she saw what had happened to her snake-son. She picked up the pieces and buried them and from each piece a maize plant grew up. She gave the ears to the other women in the village who planted them. Since then the Umotina have had maize.

One day a woman caught a "lambari," a small fresh-water fish. She liked this particular fish very much and, as she had no children, she took it home and hid it under a mat. Soon she heard it crying and when she lifted the mat she saw a boy instead of a fish. For a long time the woman hid the fish-boy from her husband, but the boy insisted on going out and following the man when he went into the woods. One day as he was following the man he called out and asked him to wait for him, but the man would not wait and continued walking and whistling. The fish-child returned home and asked, "Why does my father act like this, he does not like me for he always leaves me behind." The mother then explained, "You are not his son, you are a little fish." The boy was very sad and answered, "As I have no father I do not wish to live." He then went out in the woods, climbed a tree, and began jumping from one tree to another until he became tired and fell down and died. The woman went looking for him and found his body and brought it back to her house. The woman was very angry with her husband and explained who the boy was. The husband was sorry for what he had done and both of them went out and buried the fish-boy. From his corpse grew the following crops: Sweet-potatoes from his testicles, pepper from his eyes, and beans from his ears.

GHOSTS

When a person dies his ghost (*arumuntú*) goes into the sky, climbing up on a ladder made of sipo vine. The ladder is guarded by a *cotia*, a rabbitlike rodent, who calls out everytime a ghost is going up or down. Another version states that in the old days the ghosts went up the ladder and later came down as living beings, but one day the *cotia* gnawed away the ladder so that when a person dies today he can no longer go into the sky and return to the earth as a living being but must remain here as a ghost. The *arumuntú* sometimes enter the bodies of birds and animals. The ghost of an old bearded hunter is believed to enter the body of a jaguar or an eagle so that he can continue hunting. When a jaguar is killed the Umotina examine it carefully, for they believe that they can recognize whose ghost lived in it.

Some ghosts are good; others are evil and cause sickness. The good ghosts are those who have a living human representative whose body they can enter during the annual *ardueto* ceremony and who have living relatives who make offerings to them. Evil ghosts are foreign ghosts or the ghosts of Umotina who have died away from the village or who have no relatives to make offerings to them. When a person dies, the relatives invite some man from another family to bury the corpse. This man then becomes the ceremonial or spirit father, mother, brother, sister, son, or daughter depending upon which relative died, and once every year the ghost returns and enters the body of the person who did the burying and dances in the *ardueto*. But if the deceased has no relatives who can offer the gravedigger gifts, then the ghost becomes angry and does harm. He makes people sick, breaks pots, and takes the form of a jaguar or a snake and kills people. Eventually, however, ghosts of this kind die.

Thus the important religious rite of the Umotina is the *ardueto*, which is given every year at the beginning of the rainy season. Large quantities of fish, meat, and manioc cake are prepared by the family heads who have ghosts to whom they must make offerings. The ghosts are impersonated by the gravediggers dressed for the occasion. There appears to be four classes of spirits: the *pódopódo* or ghosts of men who have living relatives; the *bakúre* or male ghosts who have no relatives but must be appeased during the *ardueto;* and the *akakóno* and the *hatóri* who are the female correspondents of the above-mentioned male spirits. The *pódopódo* and *akakóno* dancers wear long mantles made from burití leaves, which reach from the shoulders to the ground. They wear macaw feather headdresses, glue feathers above their eyes, and pull their hair over their faces and fasten it to their beards. The *bakúre* mantle is the same as that of the *pódopódo* but it is tied around the waist, the dancer wearing a mask made from burití bark. The *hatóri* dancer wears a costume made by suspending a burití leaf mantle from a large hoop about 3 or 4 feet in diameter. A mask made from a net is placed on top of the hoop. The dancer then gets underneath and holds the hoop with his hands while dancing.

While the dancers are performing at night the women sing and the men play the flutes (*káto*) and shake gourd rattles. The flute is about 3 feet in length and is made from taquara. It is played from the side like a clarinet.

The givers of the *ardueto* are those men who have lost relatives since the *ardueto* the year before. These men usually combine in collecting the food and building a temporary house in which the dancers dress for the ceremony. When the ceremony is over the dancers give their mantles to the givers of the feast, who use them for making mats.

The Umotina do not appear to have shamans. Every man is believed able to call up any friendly ghost. He blows on an armadillo-shell horn and offers the ghost chicha. That night the man will meet the ghost in his dreams, who will then tell him what to do in order to cure himself or a sick relative.

LIFE CYCLE

A month or two before expecting a child a woman eats only manioc products, maize, and honey; meat and fish being strictly avoided. These dietary restrictions continue for some months after the birth of the child. The husband, however, is free to eat what he wishes.

When a woman feels birth pains she goes into the woods accompanied by her mother or mother-in-law. Delivery is made in a kneeling position. The umbilical cord is tied with tucum twine and cut with a bamboo sliver, the placenta being buried. The midwife then carries the child and assists the mother back to the village. The child is taken near a fire, washed, and its arms and legs are "pressed into human shape." Twins are accepted. When the child is a day or two old, tucum nut washers are put on its ear lobes to pierce them. These thin perforated disks are the same in appearance as those used by the Nambicuara. The grandparents then give the child a name. The child is carried on its mother's hip and is nursed for 2 or 3 years or until another child is born. The Umotina gave no information about using herbal medicines to induce abortion, nor did they mention anything about infanticide. The first foods a child eats consist of baked sweet-potatoes, broiled fish, and occasionally meat. Children sleep with their mothers until about 5 or 6 years of age.

When a girl reaches the age of puberty she paints herself with urucú and puts on a pair of feather ear pendants to let the young men know that she has come of age. She is not secluded by her parents nor is a public ceremony held. When a boy reaches the age of 15 or 16, an old male relative pierces his lower lip with a bone awl. The family then invites the villagers to a feast. The visitors must bring arrows, which they present to the young man.

Young men choose their future wives. When a young man finds a girl he likes he paints himself, puts on all his decorations, goes to the girl's house, and sleeps on the girl's mat all night, but without touching her. Next morning the parents of the girl ask her if she wishes to marry the young man. If the girl agrees, her mother orders the young man to go out hunting. The mother observes the young man's behavior and success in hunting. When the young man has brought in enough game he is permitted to sleep with the girl and is thereafter considered her husband. He remains with his in-laws and is treated like a son, for if the father-in-law has sons of his own they go out in marriage. Mothers-in-law appear to be important in men's lives, for one man told me that when one goes into the spirit world one asks first about one's mother-in-law.

When a person is dying the relatives begin to wail around his mat. The friends of the dying then come and participate in the wailing. A relative of the dying person then selects a non-relative to bury the corpse. This man, who is called *motoháto*, asks other men to help him and they dig a grave about 5 feet deep in the floor of the house using sword clubs for digging. The body is then painted and the decorations are put on, the bow and a few arrows are laid beside him so they rest on his right shoulder, and the sword club is placed on his chest. He is then sewn up in four layers of sleeping mats (*púpurúna*) and is lowered into the grave. A woman is similarly wrapped in mats, and a digging stick is placed with her. The grave is left open for one day so that friends and relatives can continue crying over it. The people build a new house nearby but keep the old one repaired for as long as a year, depending upon how well the deceased person was regarded by his or her relatives.

Men enter the spirit world armed so that they can defend themselves. The digging stick which the women take is also used for defence. If men quarrel and fight while living, the loser dreams that when he dies he will turn into a jaguar or a snake and will lie in wait for his enemy's ghost. When this ghost enters the spirit world he will kill it. This is why men must be armed. The Umotina stated that their greatest fear was about their own souls after death. If a person injured another while living, he might be punished after death by having his ghost killed. There appears, thus, to be a relationship between the life of the ghosts in the spirit world and the tensions existing between the families which were not direct kin with one another. Even while alive the ghosts punished evildoers. If a man does an injury to another, the injured man's father's or brother's ghost would come at night and beat him. To be sure that one's ghost would survive, the Umotina say a man must be good to his relatives and must not quarrel with the people in the village.

KINSHIP CHARTS

Charts 1 to 14 give kinship terms of the Camayurá, Bacairí, Nambicuara, and Umotina, and other northern Mato Grosso tribes. (See pp. 112–123.)

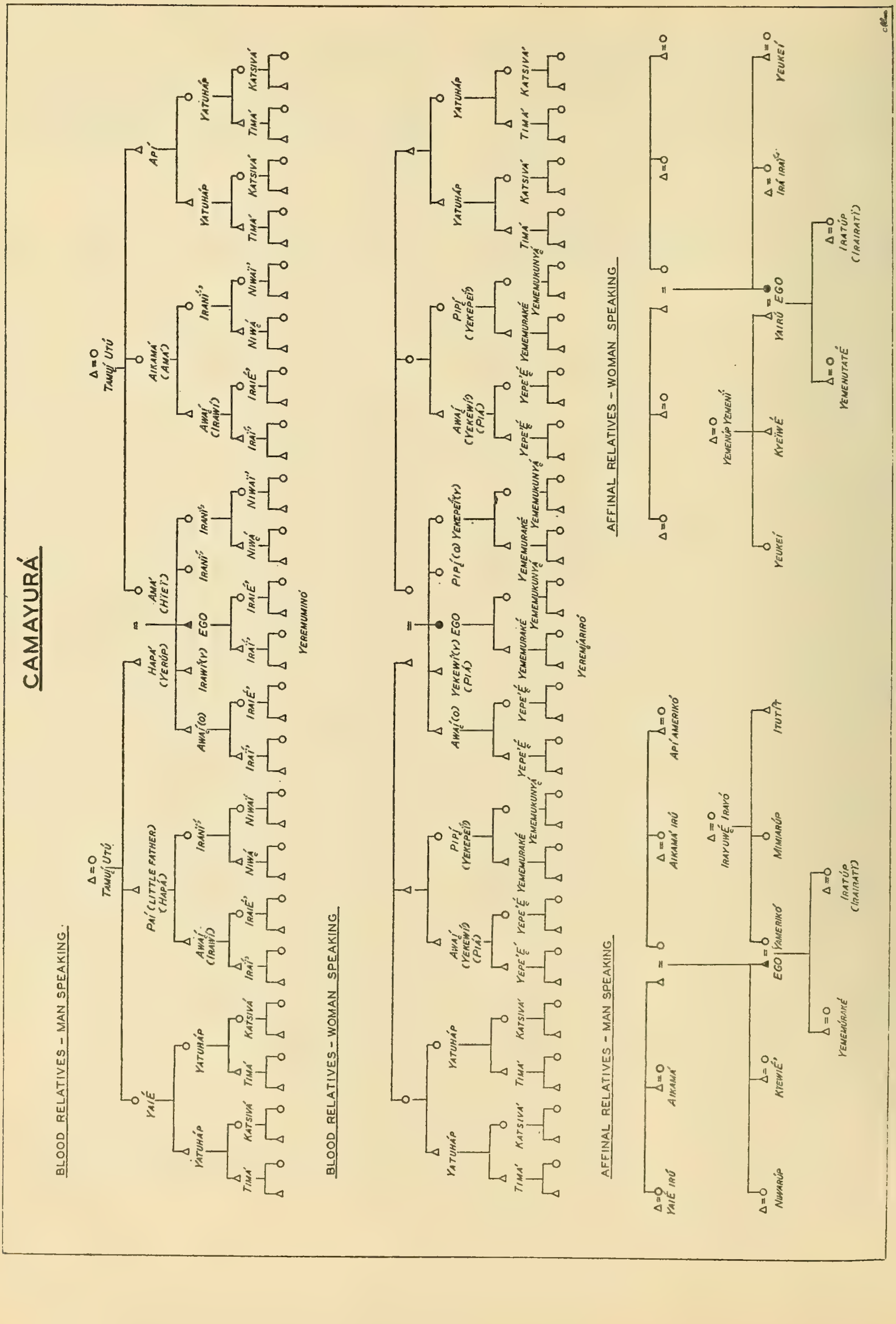

CHART 1.—Camayurá, Tupí-speaking.

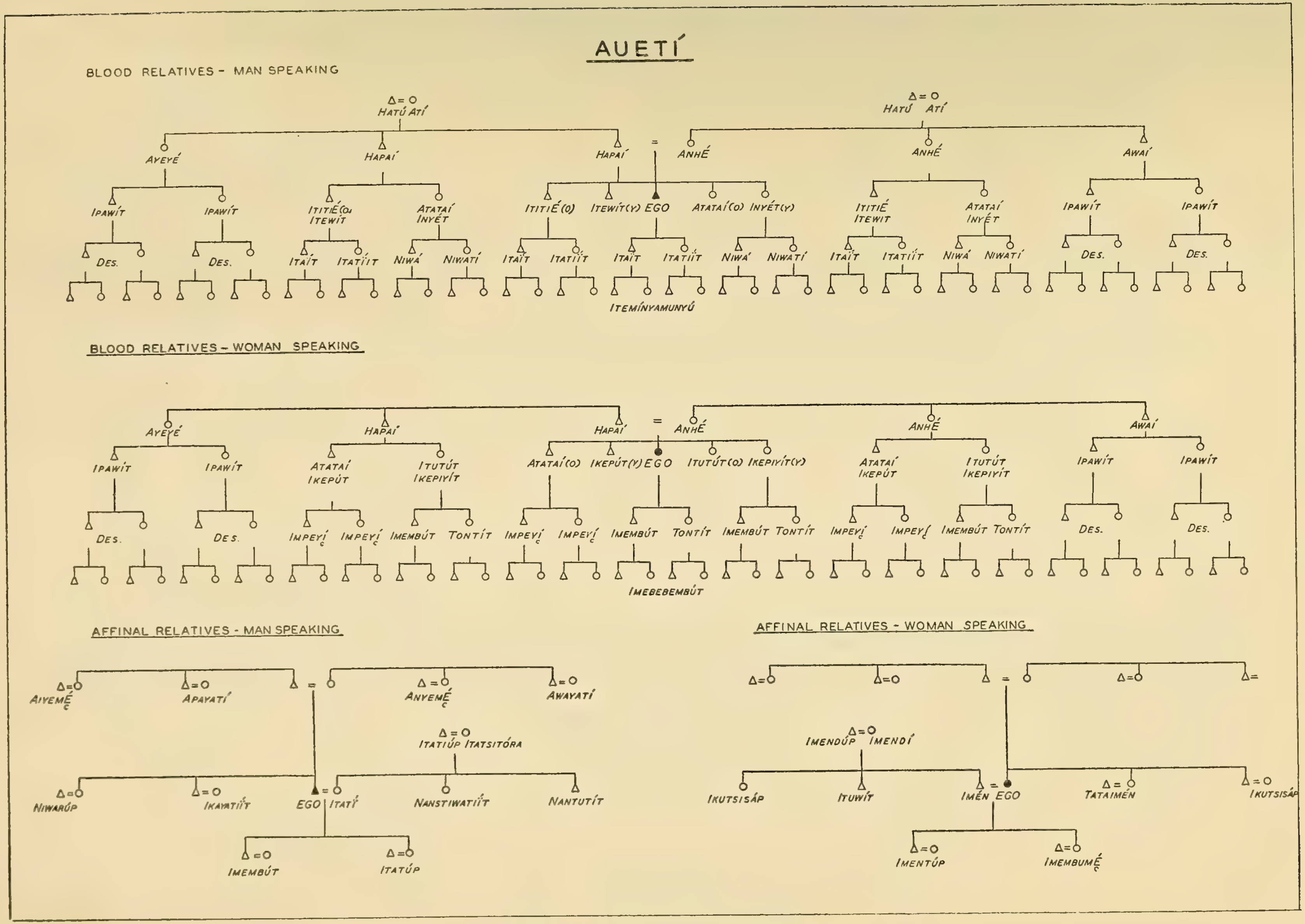

CHART 2.—Auetí, Tupí-speaking.

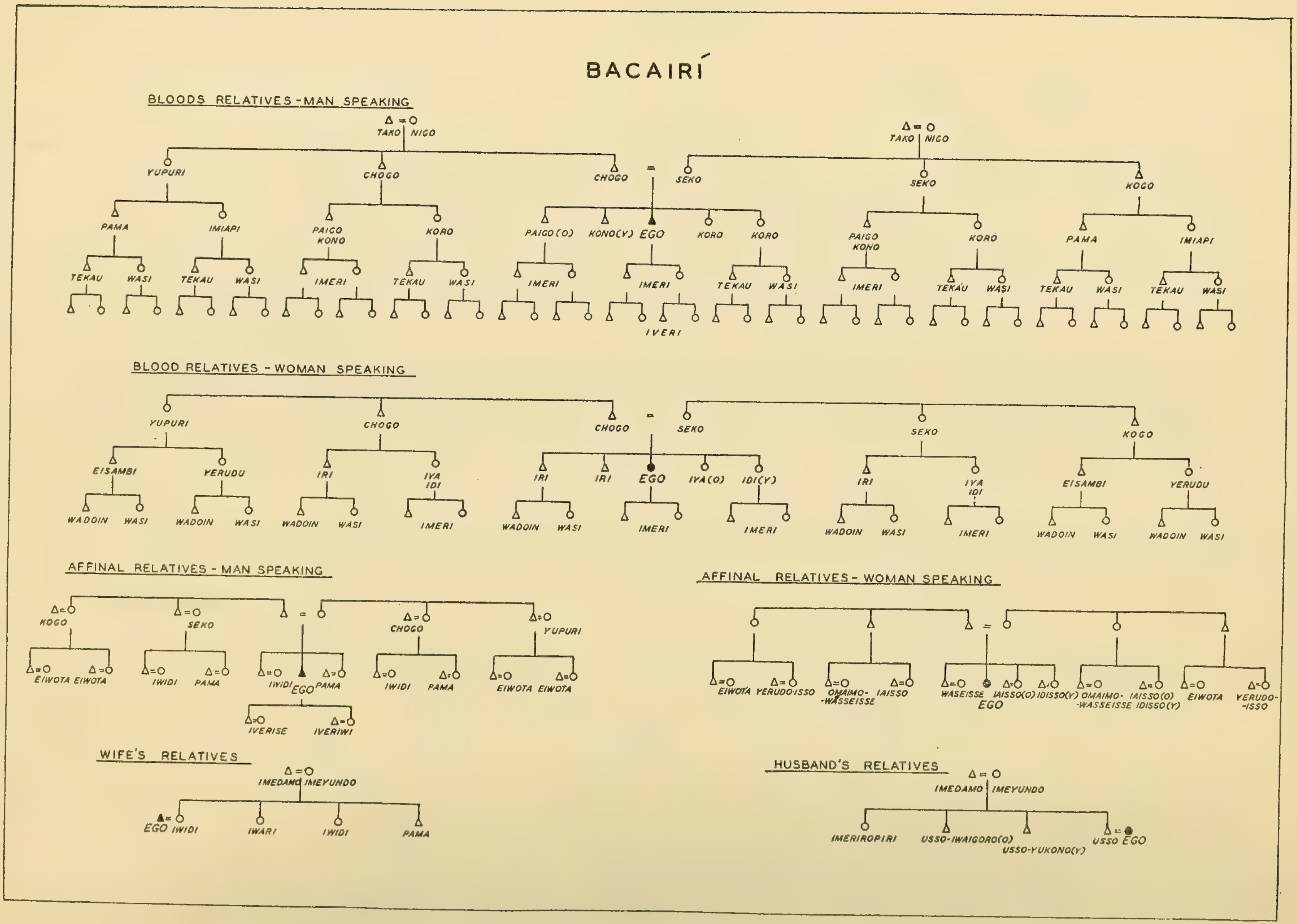

CHART 3.—Bacairí, Carib-speaking.

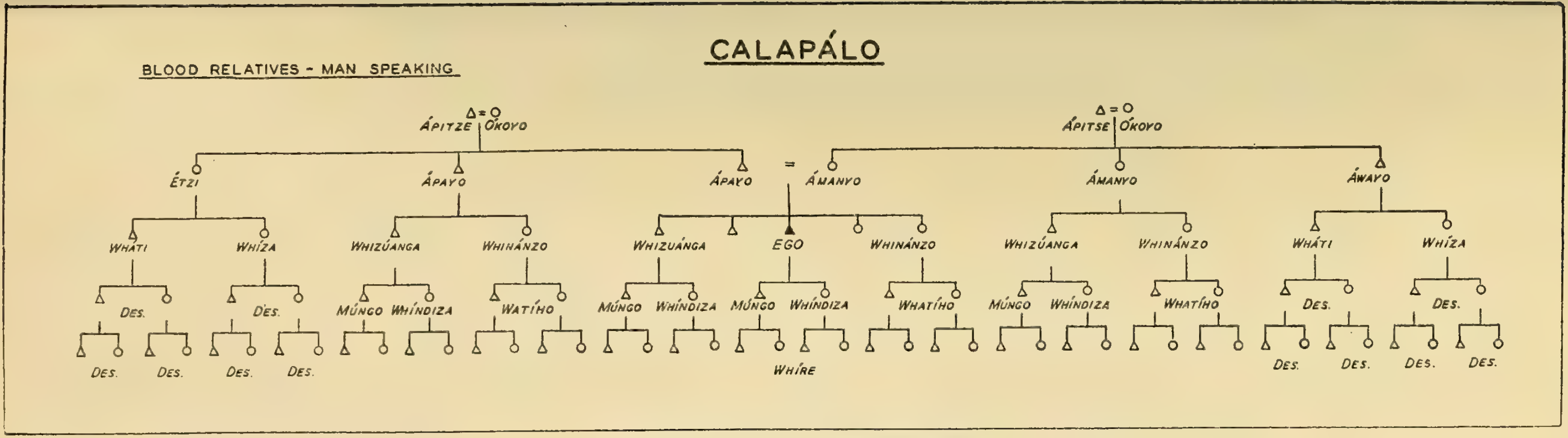

CHART 4.—Calapálo, Carib-speaking.

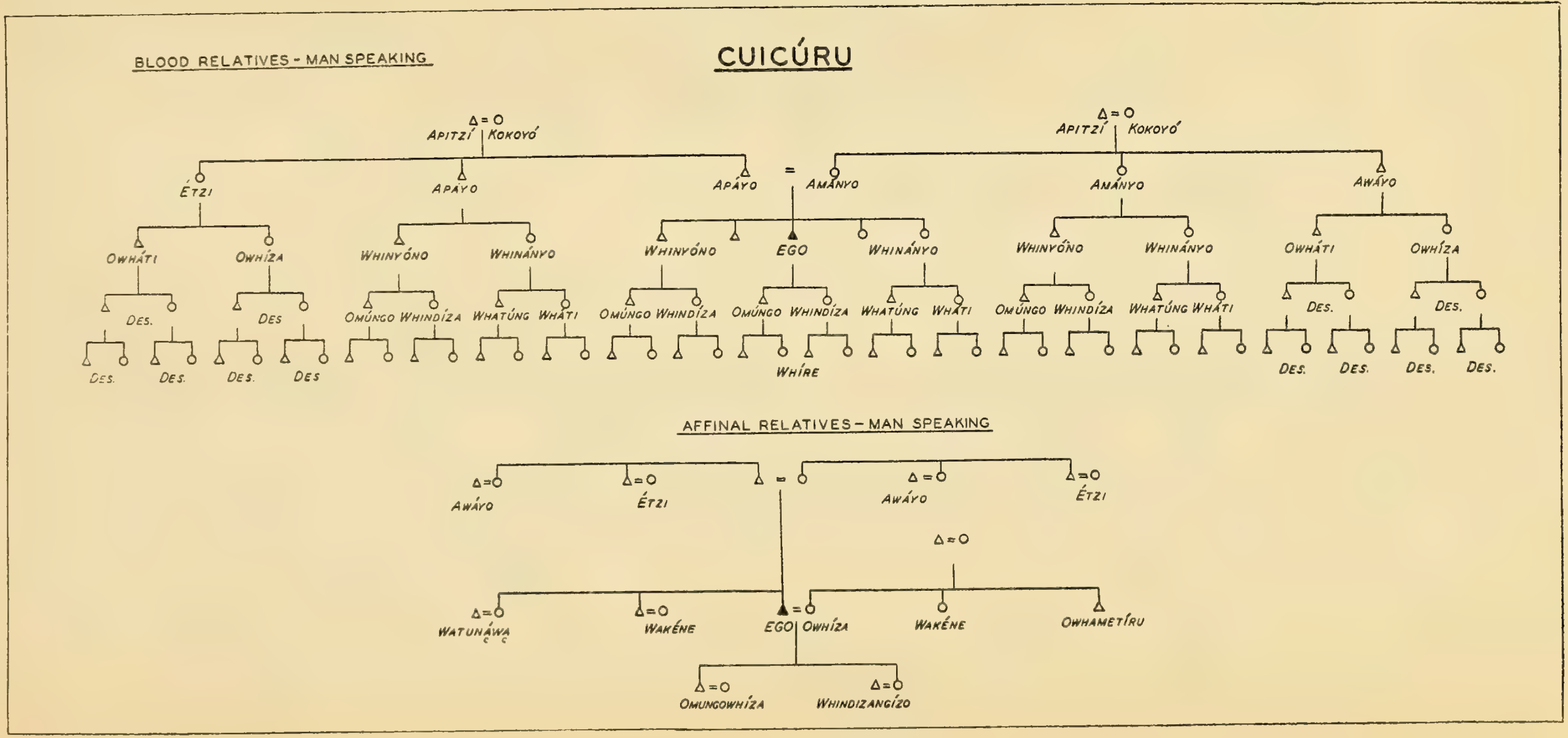

CHART 5.—Cuicúru, Carib-speaking.

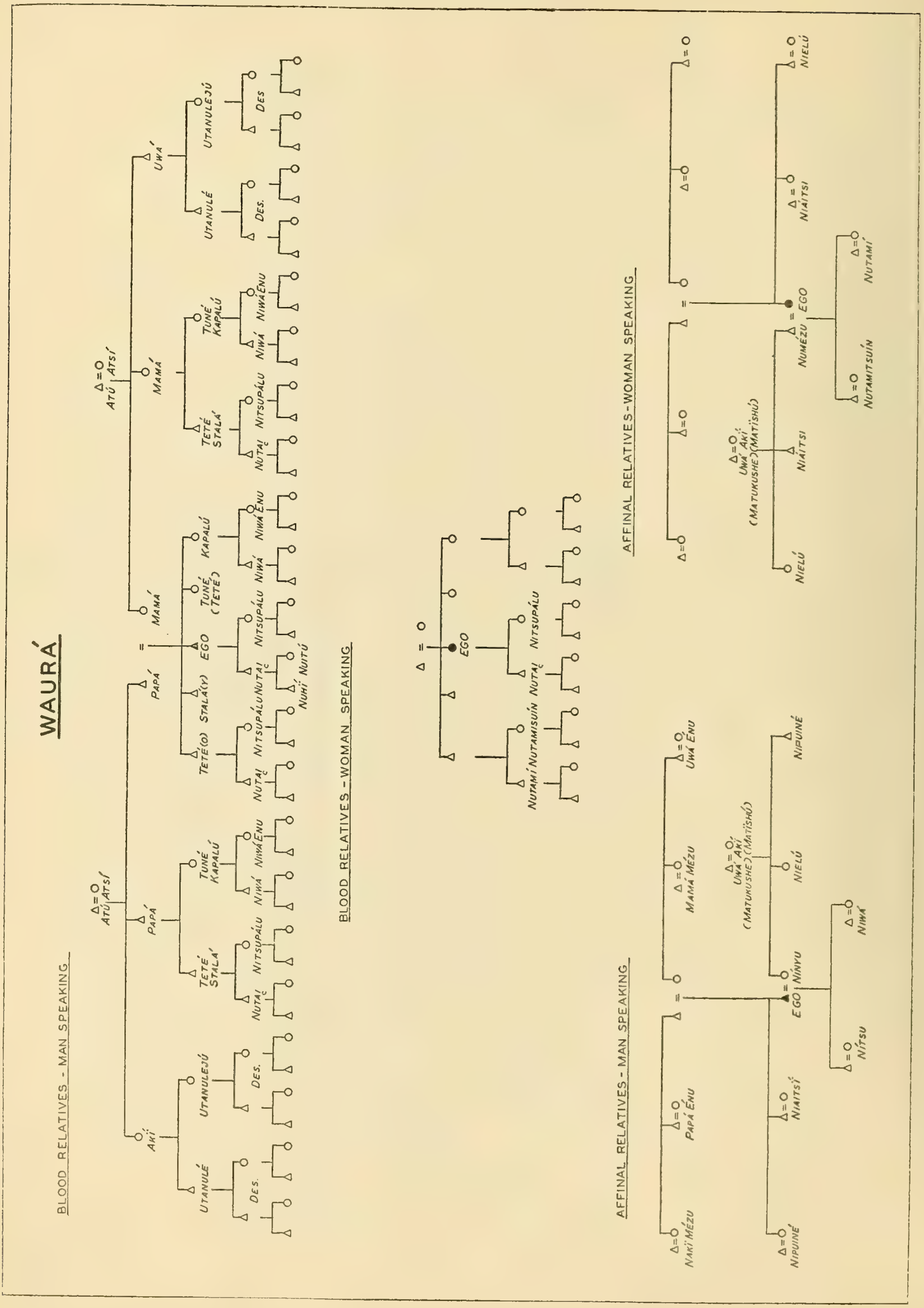

CHART 6.—Waurá, Arawak-speaking.

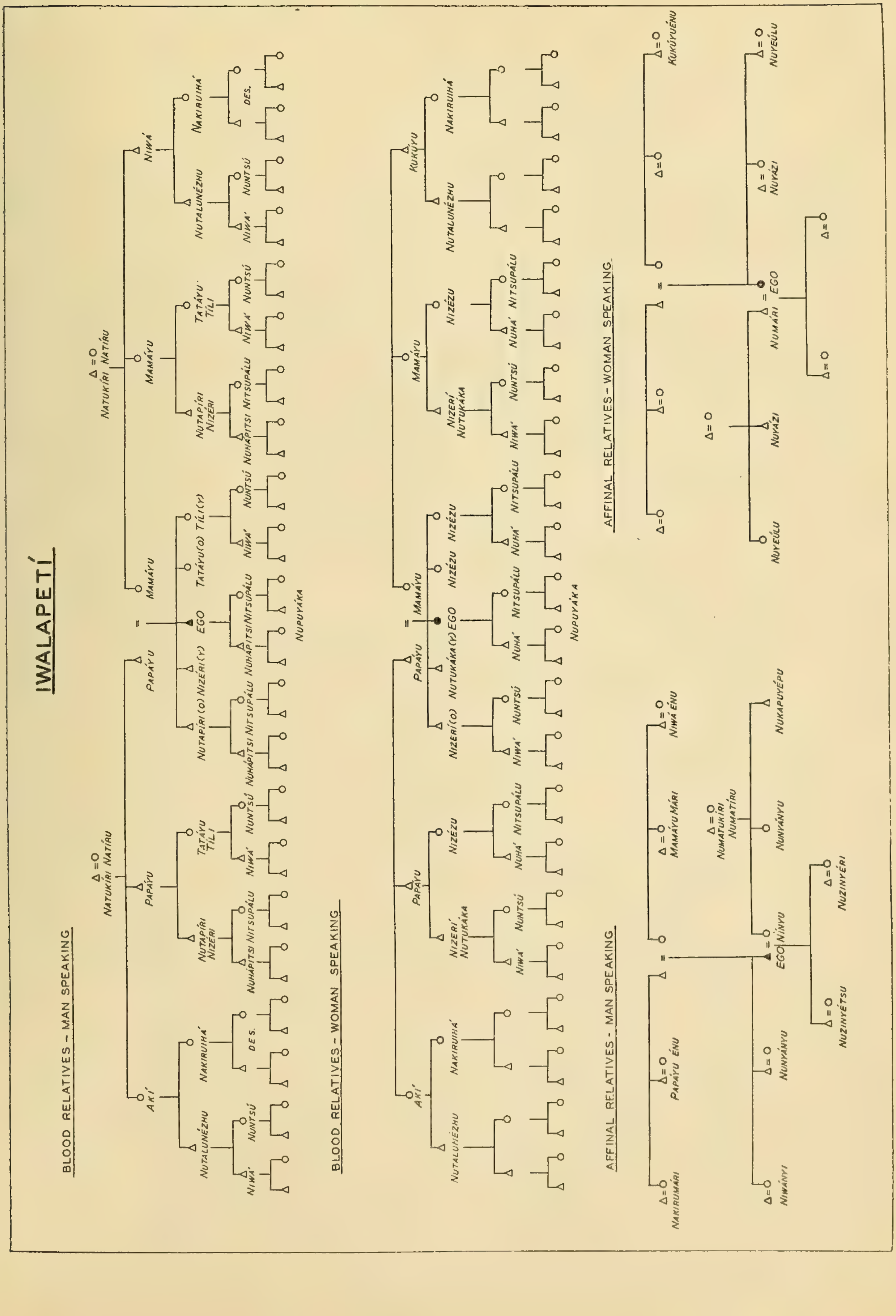

CHART 7.—Iwalapetí, Arawak-speaking.

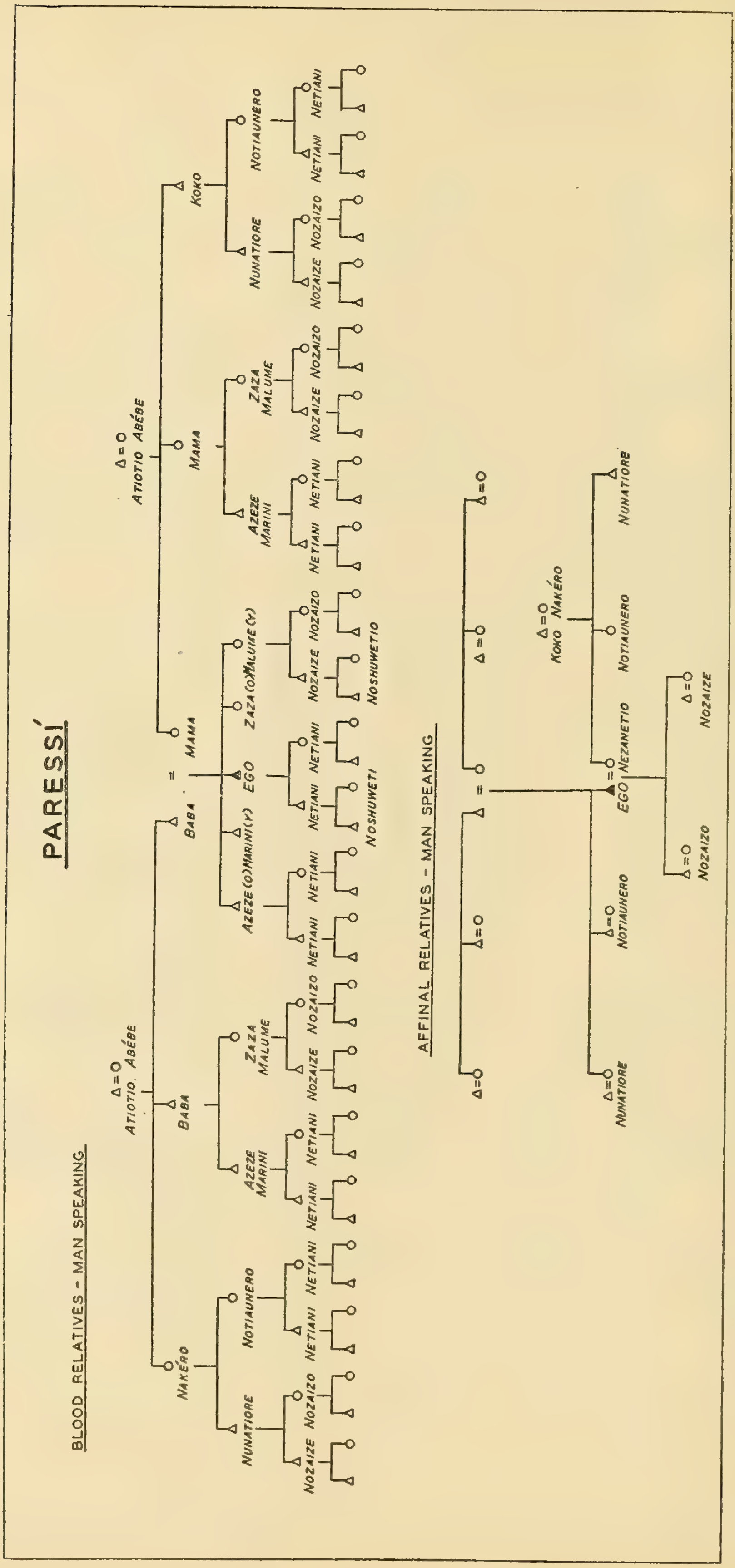

CHART 8.—Paressí, Arawak-speaking. Husband, *Nezanene.* Sometimes *Nodje* is prefixed to *Marini* to designate younger brother or sister. To designate son or daughter, *Enamokosé* (male) or *Ohiromokosé* (female) is suffixed to *Netiani.*

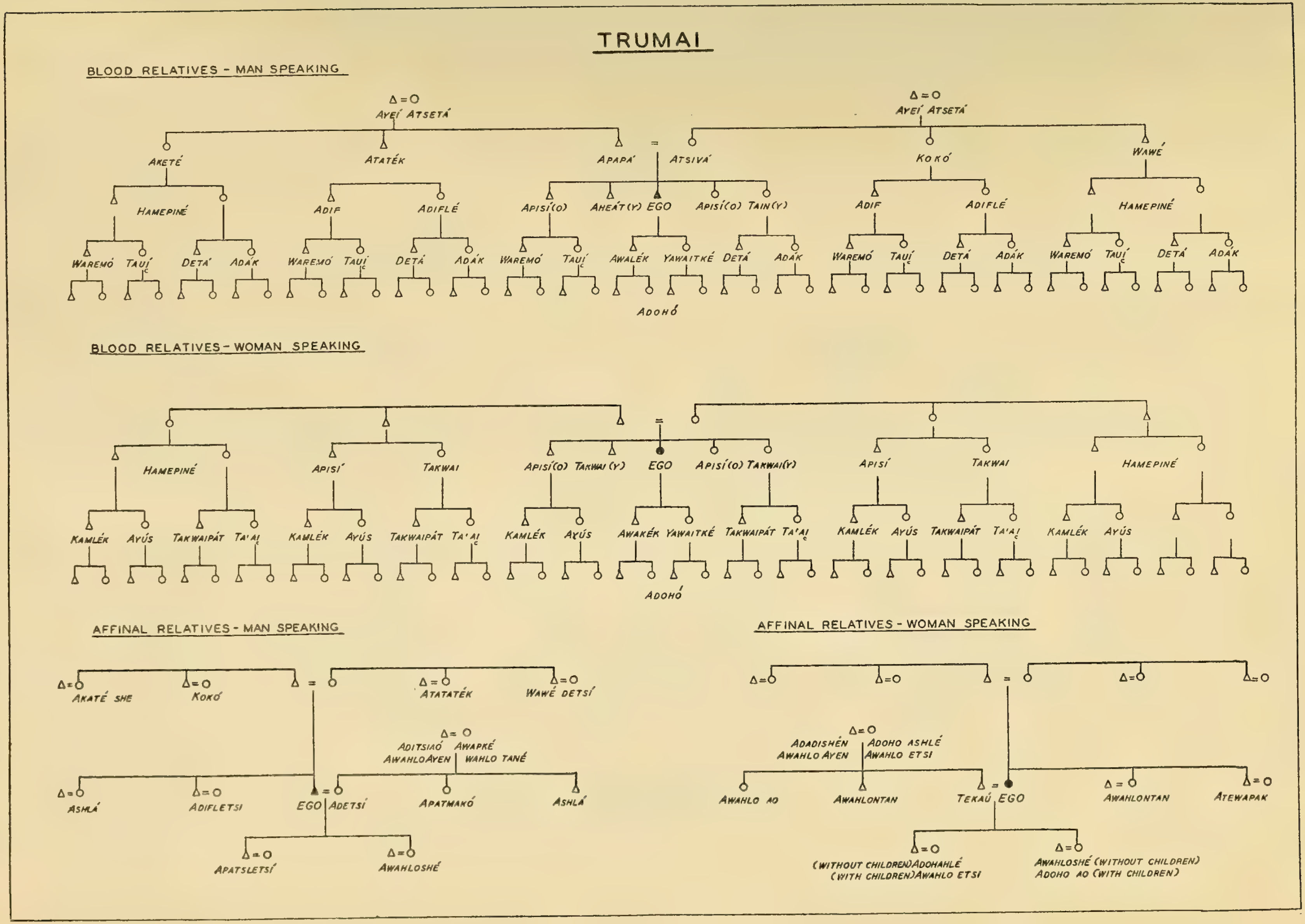

CHART 9.—Trumai, unrelated.

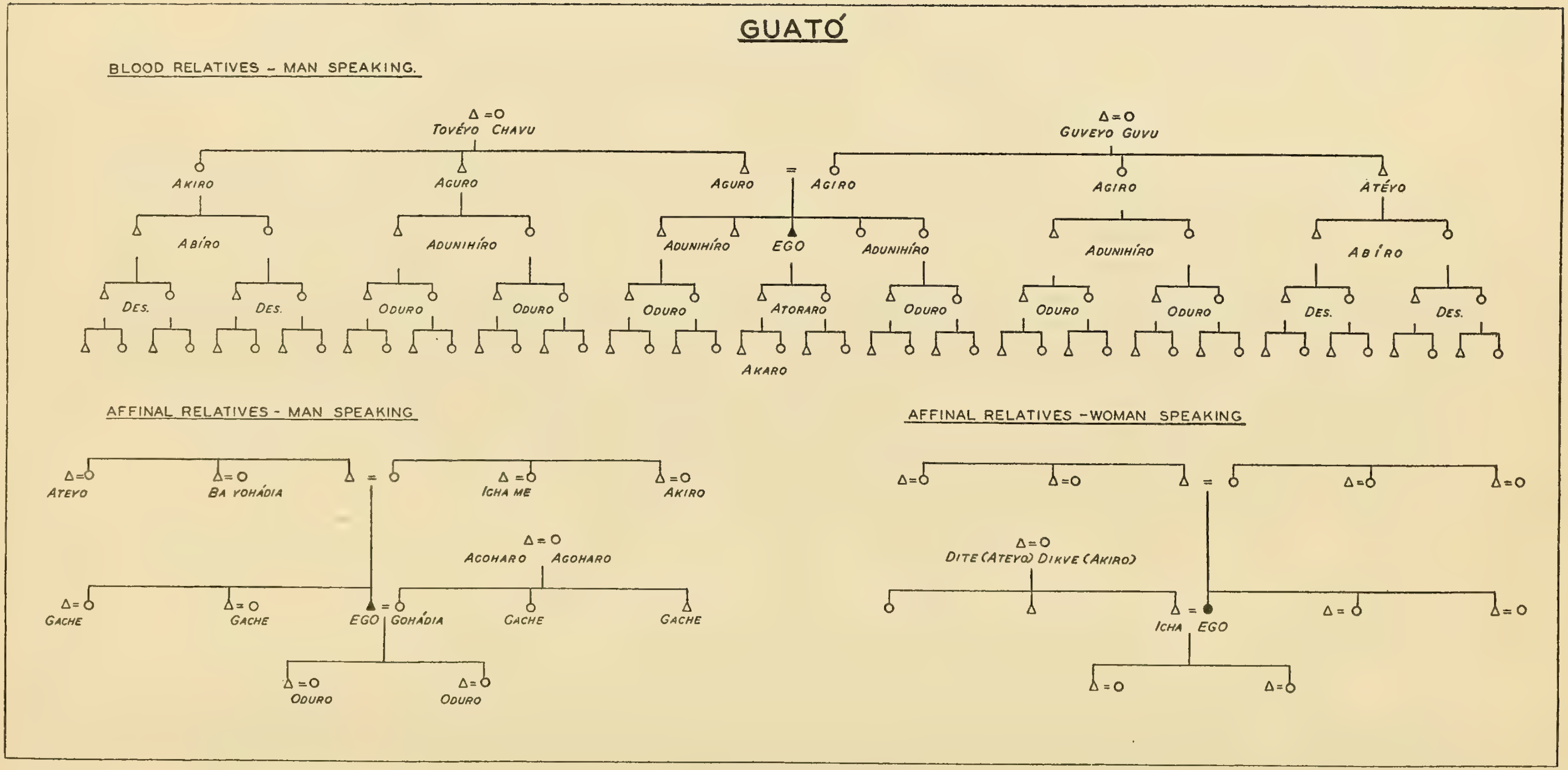

Chart 10.—Guató, unrelated. To designate male and female, *gode* (male) and *gohadia* (female) are added to brothers, sisters, cross cousins, sons, daughters, and grandchildren.

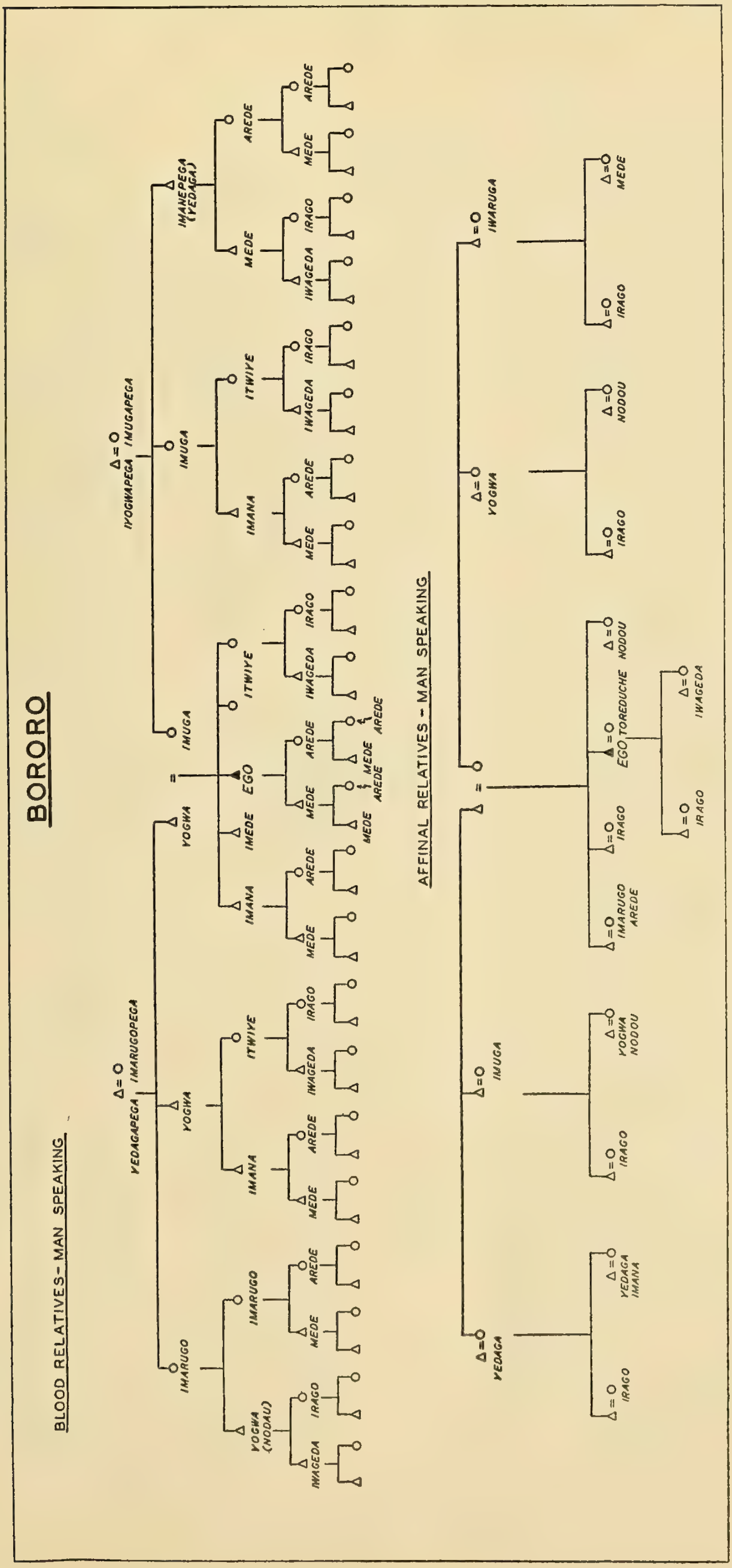

CHART 11.—Bororo, unrelated. (See Appendix 2.)

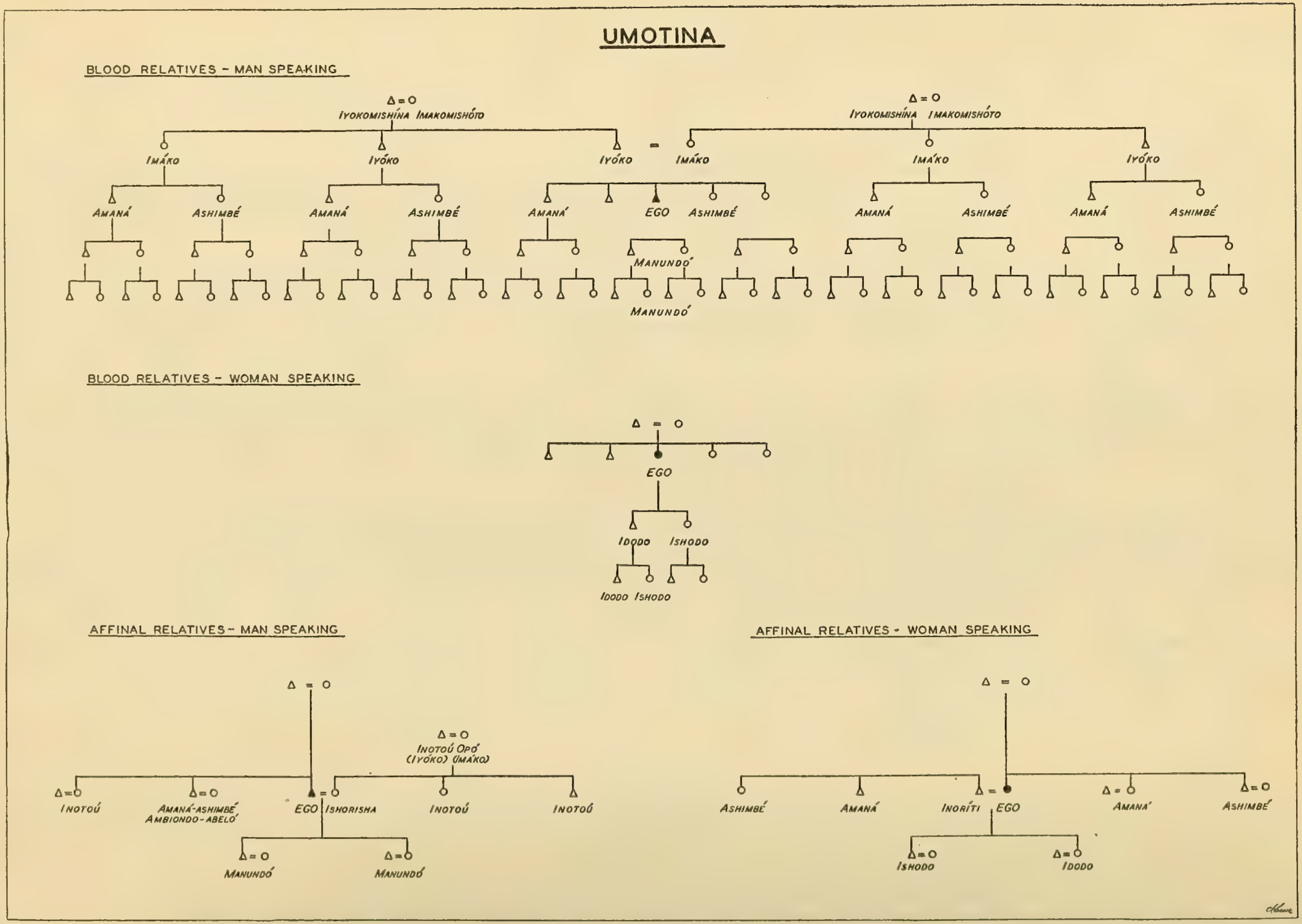

Chart 12.—Umotina, related to Bororo. *Abi* (brother) is considered more respectful than *Amaná*. *Ambiondo* is used to designate younger brothers. *Ambindo* and *Abeló* designate younger sisters. *Parepo* is added to *Manundó* to designate son or grandson. *Omunotó* is added to *Manundó* to designate daughter or granddaughter.

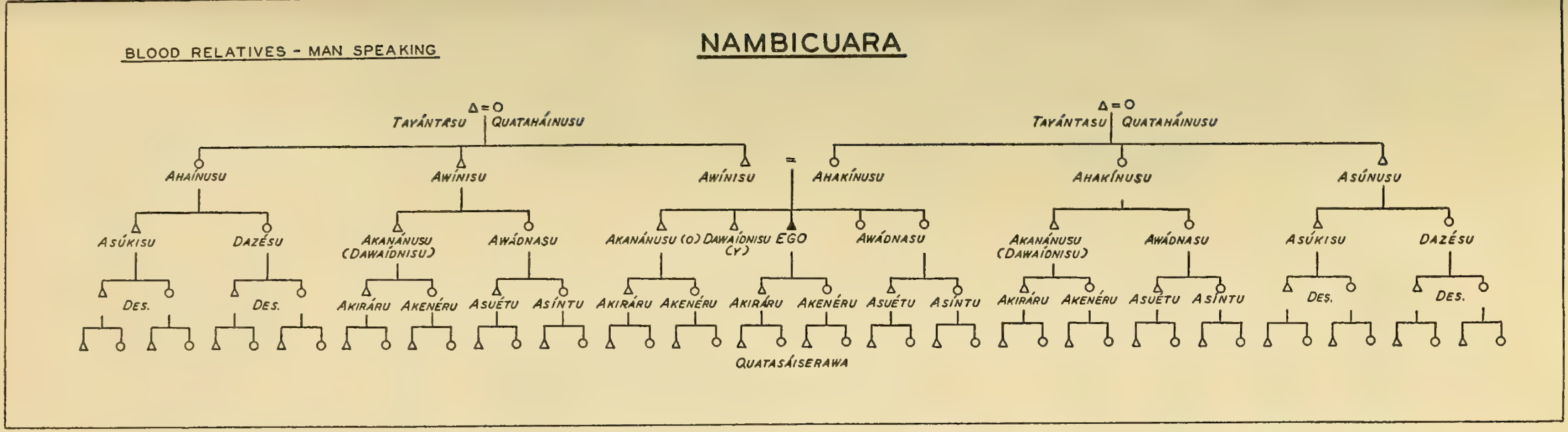

Chart 13.—Nambicuara, unrelated (?). Husband, *Amesáizu.* Wife, *Azesu.* Father-in-law, *Asúnusu.* Mother-in-law, *Ahaínusu.*

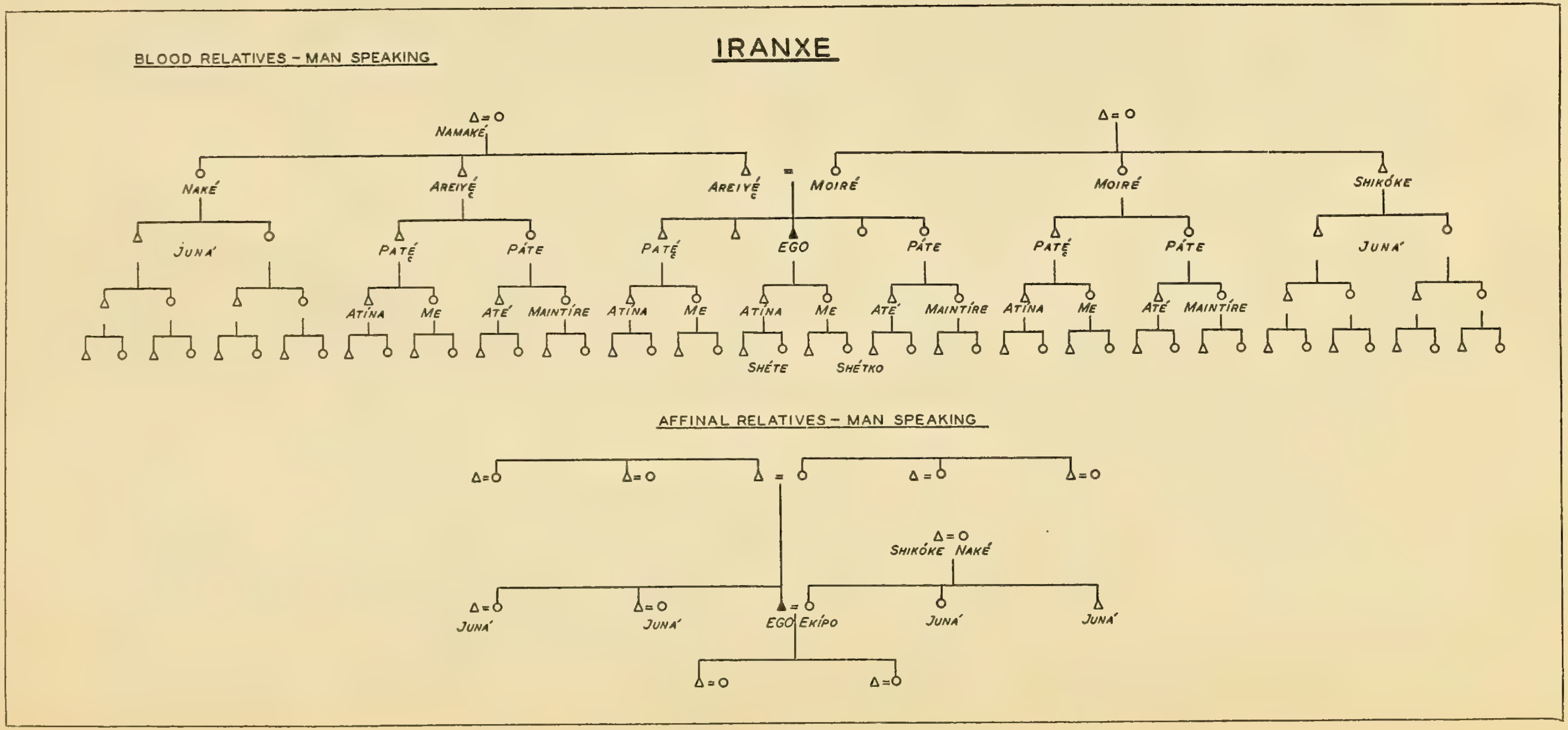

Chart 14.—Iranxe, possibly Arawak-speaking. Husband, *Intúma.*

APPENDIX 1

RESOURCES OF THE NAMBICUARA

AGRICULTURAL FOOD PLANTS

Portuguese name	English name	Scientific name	Nambicuara name
Amendoim	Peanuts	*Arachis hypogaea*	Wáikisu.
Araruta	Arrowroot	*Maranta arundinacea*	Yeláosu.
Batata doce	Sweetpotatoes	*Ipomoea batatas*	Wīsu.
Cará		*Dioscorea* sp	Ha'kisu.
Fava	Beans	*Phaseolus lunatus*	Kwā'su.
Mandioca brava	Manioc	*Manihot esculento*	Walídnsu.
Milho	Maize	*Zea mays*	Kayátsu:

AGRICULTURAL NONFOOD PLANTS

Algodão	Cotton	*Gossypium* sp	Kúunsu.
Fumo	Tobacco	*Nicotiana tabacum*	E'tsu.
Cabaça	Gourd	*Lagenaria siceraria*	Kad'é'henesu.
Urucú		*Bixa orellana*	D'unákasu.

WILD FOOD PLANTS (FRUITS)

Ananás	Pineapple	*Ananas comosus*	Kuáhlu.
Babaçú		*Orbignya martinana*	Wainsíkisu.
Bacaba		*Oenocarpus bacaba, distichus*	Wédnsu.
Bocaiuva		*Acrocomia eriocantha*	Halúnkisu.
Burití (nuts)		*Mauritia flexuosa; M. vinifera*	Héeru.
Cajú-do-campo	Savanna cashew	*Anacardium nanum*	E'hru.
Cajú-do-mato	Forest cashew	*Anacardium gigantum*	Daunlíkisu.
Cumbarú		*Dipteryx odorata*	Najgisu.
Fruta-de-lobo		*Solanum lycocarpum*	Kúnakisu.
Jaboticabeira	Jaboticaba tree	*Eugenia cauliflora*	Alihúnisu.
Mangabeira	Mangaba tree	*Hancornia speciosa*	Shikiúligosu.
Marmeleiro-do-campo	Quince tree	*Maprounea brasiliensis*	Tãohlu.
Marmeleiro-de-espinho	do	do	Kad'i'kisu.
Marmeleiro	do	do	Waīlikisu.
Marmeleiro	do	do	Halu'kisu.
Piquiseiro	Piqui tree	*Caryocar brasiliensis*	A'hru.
Petalas brancas de arbusto			Alúnyatsu.

WILD PLANTS USED IN MANUFACTURE

Burití		*Mauritia flexuosa; M. vinifera*	Yélasu.
Camaiuva		*Guadua* sp	Kadíkatsu.
Cipó		*Philodendron imbe*	Kasésu.
Piuva-da-mata (Parápará)		*Jacaranda copaia*	Hala'su.
Sapé		*Imperata brasiliensis, contracta*	Kadekídansu.
Seringueira	Rubber tree	*Hevea brasiliensis*	Walíkikatsu.

WILD PLANTS USED IN MANUFACTURE—Continued

Portuguese name	English name	Scientific name	Nambicuara name
Siriva		*Syagrus speciosa*	Dugndúgatsu.
Taquara para ponta de flecha	Bamboo for arrowheads		Kayẽasu.
Taquara para flauta secreta	Bamboo for sacred flute		Ka'd'inensu.
Taquara para panpipe	Bamboo for panpipe		Wasingatsu.
Tucum		*Astrocaryum tucuma*	Haló'tsu.

PLANTS USED FOR DRUGS AND POISON

Portuguese name	English name	Scientific name	Nambicuara name
Timbó		*Paullinia pinnata*	Kúuntu.

PLANTS USED IN VARIOUS ECONOMIC WAYS

Portuguese name	English name	Scientific name	Nambicuara name
Lixeira			Kalínasu.
Embira			Sa'hlu.

MAGICAL PLANTS

Portuguese name	English name	Scientific name	Nambicuara name
Paratudo			Inháuködãosu.

ANIMALS HUNTED FOR FOOD [2]

Portuguese name	English name	Scientific name	Nambicuara name
Anta	Tapir	*Tapirus terrestris*	Alúnsu.
Ariranha	Otter	*Pteronura brasiliensis*	Díwisu.
Bugio		*Alouatta ursina*	Ihru.
Caitetú	Peccary	*Tayassu pecari*	Y'ákisu.
Camondongo	Mouse	*Mus musculus*	Súuhlu.
Capivara	Capybara	*Hydrochoerus hydrochaeris*	O'nsu.
Coatí	Coati	*Nasua narica*	Kaisu.
Cotia	Rodent	*Dasyprocta aguti*	Dúhru.
Cuatá		*Ateles ater*	Hósadasu.
Cuxio		*Ateles paniscus*	Kalínsu.
Jaguatirica		*Felis pardalis chibiguazu*	Ianaráwidnsu.
Lontra	Otter	*Lutra paranensis*	Kwantnáisu.
Macaco-prego	Monkey	*Cebus apella*	Hótsu.
Onca parda	Brown panther	*Felis concolor*	Ianaránenensu.
Onça pintada	Jaguar	*Felis onca*	Ianarátasu.
Ouriço		*Coendou prehensilis*	Holoótasu.
Paca		*Cuniculus paca*	Úlutsu.
Porco do mato			Yákadesu.
Preguiça		*Bradypus tridactylus*	Aláisu.
Rato do chapadão		*Scapteromys gnambiquarae*	Nótasu.
Saguí-piranga		*Midas rosalia*	Takísu.
Tamanduá-bandeira		*Myrmecophaga jubata*	Díklisu.
Tamanduá-mirim		*Cyclopes didactylus*	Wáinsu.
Tatú-bola	Armadillo	*Tolypeutes tricinctus*	Núunsu.
Tatú-canastra		*Priodontes giganteus*	Wahrúru.
Tatú-cascudo			Sunaisu.
Tatú-liso			A'hru.
Tatú-15-quilos			A'látasu.
Veado campeiro (a)	Deer		Yetáhru.
Veado campeiro (b)	do		Whídisu.
Veado mateiro		*Majama rufa*	Kuáklisu.

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[2] Other rats yet unidentified are also eaten.

OTHER ANIMAL FOODS COLLECTED

Portuguese name	English name	Scientific name	Nambicuara name
Gafanhoto	Grasshopper	*Saltatórios*	Klósusu.
Jacaré	Cayman	*Caiman*	Wáklisu.
Jabotí		*Testudo tabulata*	Yutánhru.
Jibóia	Boa constrictor	*Constrictor constrictor*	Wáikisu.
Lagartixa	Lizard	*Anisolepsis*	Yenalákadasu.
Lagarto	do		Sínsu.
Larvas de abelha (Jatí)			Waiawénisu.
Larvas de bezouro em burití			Hínasu.
Larvas de bezouro em taquara			Alukínasu.
Larvas de bezouro em pau podre			Netláhátlasu.
Mel	Honey		Du'su.
Sauva	Ant	*Oecodoma cephalotes*	Sawádnsu.
Sucurí	Anaconda	*Eunectes murinus*	D'ihedasu.
Tracajá	Turtle	*Podocnemis dumeriliana*	Hadíkisu.
BIRDS [3]			
Arara	Macaw	*Ara ararauna*	Alaõsu.
Ema	Rhea	*Rhea americana*	D'a'su.
Gavião (all species)	Hawk		Tauptú.
Jacú		*Cracides*	Ala'su.
Jacutinga		*Cumana jacutinga*	Kwáyisu.
Jaó		*Tinamus noctivagus*	Wahótasu.
Macuco		*Tinamidas*	Aitsu.
Mutum		*Crax alector*	Wítisu.
Papagaio	Parrot		A'hlu.
Perdiz	Partridge	*Rhynchotus rufescens*	Halutchegngisu.
Periquito (grande)	Parakeet		Sawihru.
Periquito (verde)	do		Kanékisu.
Pombo carijó	Pigeon		Kwasá'su.
Rolinha		*Columbina picui picui*	Wẽsu.
Seriema		*Cariama cristata*	Kwalátsu.
Tucano (grande)		*Ramphastidae*	Yeladndasu.
Tucano (pequeno)		do	Yelásu.
FISH			
Peixe	Fish		Ãidnsu.
Jaú		*Paulicea lutkeni*	Kwíhru.
Lambarí		*Tetragonopterus jenynsi*	Háru.
	Long-tailed fish		Ayúlunasu.
Matrinchão		*Brycon brevicauda*	Wasíkisu.
Pacú		*Prochilodus*	Kalá'tsu.
Piava			Únklusu.
Robafo (Traira)		*Hoplias malabaricus*	Aídndasu.

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[3] All birds are eaten except the walúsu (urubú).

APPENDIX 2

BORORO KINSHIP SYSTEM

The Bororo are divided into two exogamous matrilineal moieties—*Cheráide* and *Tugarégede*. A man in the *Tugarégede* moiety calls all men of his own moiety *tugarége* and all women *tugarére*. He calls men of the *Cheráide* moiety *cherái* and women *cheráre*. One's opposites can be collectively called *yorubúdare*, or if they are small children, *yorubúdarédrogo; drógo* meaning little.

There are actually few classificatory terms in the Bororo kinship system. In a general way all men of the opposite side are fathers (*yógwa*). Generation lines are largely ignored. If the *yógwa* is old he becomes a grandfather (*yógwapéga*). If one marries *yógwa's* sister he becomes one's brother-in-law (*nodóu*). Men younger than one's self are called *mede* (boy) or son of the opposite moiety.

Women of the opposite side are called mothers-in-law (*imarúga*). They are potential wives. If old they are grandmothers (*imarúgapega*). That is, one's father's mother is *imarúgapega*, one's father's sister is *imarúga*, her daughter is *imarúga*. Women younger than one's self are termed *aréde*, girl or daughter of the opposite moiety. One of these women one marries, she may be *imarúga* or *aréde*, and she becomes one's *toredúche*, wife. Her mother becomes *imarúga*.

In one's own moiety the men are generally classed as brothers (*imána*) with distinctions for younger and older brother (initiated or uninitiated). Older men are *imánapega* or *yedága*, father-in-law or initiator. Grandfather is *yedágapega;* mother's brothers are *yedága;* father's sister's daughter's husband is also *yedága*. Boys are *mede,* girls are *aréde*. When they get married one's sister's children become *iwagéda*, moiety-son; and *irágo*, moiety-daughter. *Iwagéda* is also one's son-in-law (daughter's husband).

In one's own moiety women are mothers, *imúga;* sisters before puberty, *itwíye;* and sisters after puberty, *irágo*.

Children before puberty are just *mede* (boy) and *aréde* (girl); after puberty boys and girls of one's own moiety become *iwagéda* and *irágo*, moiety-son and moiety-daughter or son-in-law and daughter-in-law. One's own son and daughter are called *méde* and *aréde*. These terms are extended to brother's sons and daughters and to sister's sons and daughters. They mean boy and girl especially when *drógo* (little) is added.

At puberty a boy goes through an initiation rite which incorporates him into his own moiety. After this, sister's son is called *iwagéda*. After the ear-piercing ceremony sister's daughter is called *irágo*.

Cheráide clans

1. Bokodóri.
2. Bakóro.
3. Badójebage.
4. Kiédo.
5. Borótcherá.
6. Óchera.

Tugaréde clans

1. Arári.
    a. Arurécha búgi wúgi.
    b. Arurécha tchibúgiwúgi.
2. Iwágudodgi.
    a. Tohóreu.
    b. Kúdjagureu.
3. Apibóregi.
4. Ipayédo.

APPENDIX 3

Anthropometry of the Umotina, Nambicuara, and Iranxe, with Comparative Data from Other Northern Mato Grosso Tribes

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In 1949, Kaoro Onaga, under the supervision of Dr. Oberg, measured 22 Umotina (14 males, 8 females), 13 Eastern Nambicuara (7 males, 6 females) of the Waklítisu band, and 5 Iranxe males. The Umotina were measured at Barra dos Bugres, the Nambicuara and Iranxe at Utiarity. Small as these series are, they represent relatively large samples of the groups from which they are drawn. The total Umotina population is about 65, with 34 adults (see p. 106); the Waklítisu band numbers only 18, and the Eastern Nambicuara together total only about 130 (see p. 86). No figures on the Iranxe are available but they are definitely a remnant group.

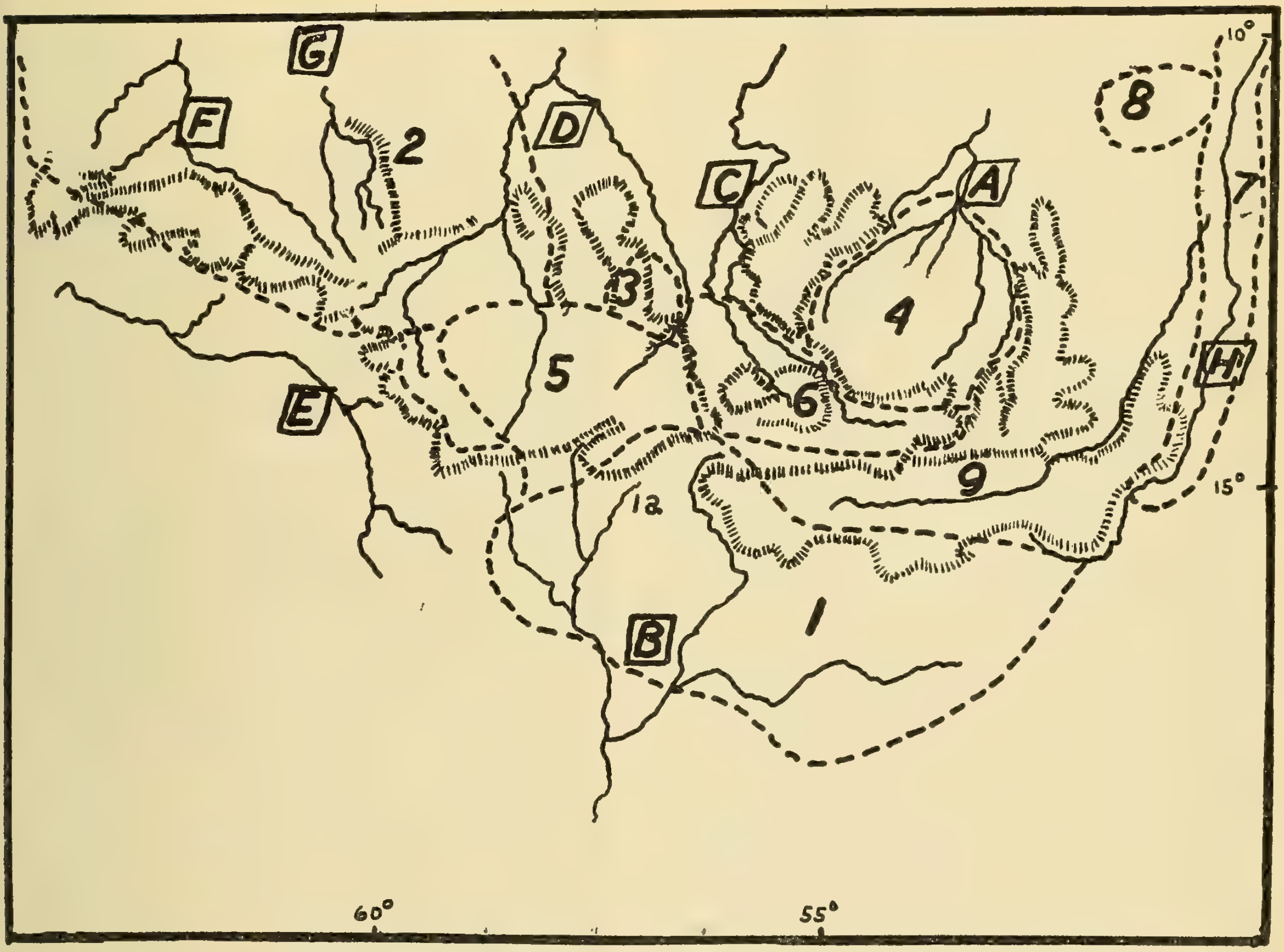
The drastic reduction of even the most secluded aboriginal populations in Brazil enhances the value of physical studies already made on them. The present contribution to the physical anthropology of northern Mato Grosso may be added to the earlier studies by Ehrenreich (1897), Ranke (1910), and Roquette-Pinto (1935). In addition, the Museu Nacional in Rio de Janeiro has unpublished physical data on some of the Upper Xingú tribes, particularly the Camayurá. Vellard (see Imbelloni, 1948, p. 237, ftn.) has unpublished information on three Nambicuara bands. Willems (personal communication) is in the possession of measurements on 40 male Tapirapé. A careful analysis of all these studies should go far in rounding out the physical anthropology of northern Mato Grosso. In the meantime, I have endeavored to fit the Umotina, Nambicuara, and Iranxe series into the existing knowledge of the area.

GEOGRAPHICAL RELATIONS

Most of the series measured in northern Mato Grosso are from tribes in the Upper Xingú Basin (maps 1, 3). These are the Auetí, Trumai, Bacairí, Nahuqua, and Camayurá. Their present locations are indicated in map 2, (p. 5), and data on their earlier shiftings are given by Lévi-Strauss (1948, p. 322–323). As Oberg has said (p. 6), the fanlike network of rivers constituting the drainage basin of the Upper Xingú River affords no natural barriers and makes for easy intertribal communication by water. But the limits of the Upper Xingú Basin to the east, west, and south are marked by the sandstone plateaus of the Brazilian Shield. These barriers tend to isolate the Basin from the outside world, thus fostering its development as a riverine cultural unit (p. 7).

West of the Upper Xingú Basin, on the semiarid plateau, the Serra do Parecís, are the Paressí, Iranxe, and Eastern Nambicuara. In earlier times, most of these people were concentrated along the "galeria" forests bordering the headwaters of rivers originating on the plateau. The location of the Iranxe at white contact was immediately north of the Paressí. The Nambicuara were thinly scattered in the less habitable areas west of the Paressí. In contrast to the more populous Upper Xingú tribes, the Paressí, Iranxe, and Eastern Nambicuara are now remnant groups.

Across the semiarid plateau, or Planalto do Matogrosense, which forms the southern barrier



Map 3.—Schematic map of approximate tribal locations in relation to topography and drainage systems in northern Mato Grosso. Dotted lines indicate tribal boundaries at time of contact (after Steward and Mason, 1950). Hachures indicate the general conformation of the Planalto do Matogrosense. Tribes: 1, Bororo; 1a, Umotina; 2, Nambicuara; 3, Iranxe; 4, Upper Xingú tribes; 5, Paressí; 6, Bacairí; 7, Carajá; 8, Tapirapé; 9, Cayapó. Drainage systems (simplified): A, Upper Xingú; B, Upper Paraguay; C, Paratinga-Verde; D, Arinos-Papageio; E, Guaporé; F, Gy-Parapa; G, Theodore Roosevelt; H, Araguaia.

of the Upper Xingú Basin, lived the Bororo. With the Guató and others, the Bororo occupied the headwaters of the Upper Paraguay River. As a Bororo subtribe, the Umotina formerly lived between the headwaters of the Upper Paraguay and Sepotuba rivers (Lowie, 1946, p. 419). The São Lourenço group of Bororo, measured by Ehrenreich, inhabited the upper and middle reaches of the São Lourenço River.

To the east of the Upper Xingú Basin, along the Araguaia River, are the Carajá. They are included in this analysis less for their geographic position than for their metric similarity to the Umotina.

APPRAISAL OF MIXTURE

Oberg (personal communication) has indicated that no subject with detectable neo-Brazilian admixture was included in the series. The Eastern Nambicuara have had occasional contact with neo-Brazilians only since 1912, and appreciable mixture is most unlikely. While the Umotina have been peaceable only since 1913 (Lowie, 1946, p. 419), Oberg indicated there is a possibility of some neo-Brazilian admixture there, but that such admixture could hardly account for their extreme long-headedness (mean male cephalic index 73.0). This is most reasonable since

Willems (personal communication) indicates that no neo-Brazilian series within his knowledge averages less than about 79, even though the Portuguese are the most long-headed nationality in Europe. However, several of the younger Umotina adults show shorter statures and rounder heads[1] than the rest of the series. This suggests some admixture in the Umotina since 1913. Yet Oberg's morphological descriptions (see p. 134) and photographs (pls. 9, 10) give the strong impression that the Umotina as a whole are unmixed. Blood group analyses, such as Da Silva (1949, p. 8) has made on other Brazilian groups, are needed for confirmation.

No specific statement has been made concerning the racial purity of the Iranxe. They are a secluded and little-known tribal remnant, whose status is probably comparable to that of their neighbors, the Paressí.

For the Upper Xingú Basin, it seems quite certain that at least those tribes recently blood grouped by De Lima (1950) are unmixed with neo-Brazilians. De Lima studied 377 Upper Xingú Indians—109 Bacairí, 60 Camayurá, 81 Nahuqua, 47 Mehinacu, and 80 Waurá—and found them to be exclusively group O, except for one Bacairí woman with a known neo-Brazilian father. These blood-group determinations, coupled with the secluded position of the Upper Xingú Basin, render it definite that no appreciable neo-Brazilian admixture has occurred there. Furthermore, the Basin was first explored by Von den Steinen's expedition of 1884. Since Ehrenrich was a member of this expedition, his measurements are doubly certain to be of "pure" Indians.

Because of the early date of his work, Ehrenreich's measurements on the Paressí and Bororo should represent largely, if not wholly, unmixed Indians, although the Paressí have had contact with neo-Brazilian slave hunters and others since the early 18th century (Métraux, 1948, p. 180). Serological confirmation of the unmixed status of the São Lourenço Bororo, the same group measured by Ehrenreich, lies in their uniform possession of blood group O (Da Silva, 1949, p. 579). The status of the Carajá is less certain. They have been in contact with neo-Brazilians since 1682 (Lipkind, 1948, p. 180). Golden's (1930) serological work on 61 Carajá indicates a really extraordinary frequency of the gene for group B. At first glance, this suggests admixture. Since there is some question as to the technical validity of Golden's determinations (Boyd, 1950, p. 92) it is safer not to use his results as evidence of admixture, or for calculations as to the proportions of the mixing populations. It is important, however, to note that Ehrenreich's measurements of the Carajá were made over 60 years ago, when they were presumably less mixed than when Golden studied them.

Whereas neo-Brazilian admixture can be assumed to have little or no effect upon the tribes whose measurements are considered here, the same cannot be said of intertribal mixture. For example, Oberg believes ". . . that a certain amount of admixture has taken place among the Upper Xingú tribes for a long time" (p. 15). At the time of his visit, about 15 of the 110 Camayurá were from other tribes (p. 15). Tribal shiftings within the Upper Xingú Basin occurred both before and after Von den Steinen's visit, and the general trend has been toward tribal intermixture and concentration of population along the river banks (Lévi-Strauss, 1948, p. 323). Over a long period of time, this sort of genetic exchange would tend to level any physical differences originally present among the tribes of the Upper Xingú Basin.

Intertribal admixture centering around the Paressí has also been recorded. In fact, one large Paressí subgroup, the Cozarini, ". . . seem to be a mixed tribe formed by a nucleus of Paressí invaders who absorbed and assimilated Indians from other tribes, mainly Nambicuara . . . . As recently as 1910 . . . the Cozarini still fought the Nambicuara and kidnapped the men for slaves and the women for wives" (Métraux, 1948, p. 349). Other Paressí groups may be considered less mixed with surrounding Indians.

No evidence could be located concerning intertribal admixture in the Bororo, although it must have taken place in the past. It is, however, highly unlikely that the Bororo were ever in contact with the Upper Xingú and other tribes directly to the north across the Planalto do Matogrosense. As for the Carajá, they have traditionally accepted captured women and small children as full tribal members, and since prehistoric times have maintained themselves against hostile neighbors (Lipkind, 1948, p. 188).

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[1] In the male series, field Nos. 9 and 11, respectively estimated at 24 and 22 years of age, have statures of 161 and 162 cm., cephalic indices of 79.9 and 90.4. Nos. 6 and 7 of the female series, 19 and 17 years old, show corresponding figures of 152 and 154 cm., and 88.1 and 82.8. From the photographs, No. 6 (pl. 10, *a*), at least, has the appearance of being mixed.

APPRAISAL OF ANTHROPOMETRIC TECHNIQUES

Oberg followed Sullivan (1923) in teaching his students to measure, and added head height, minimum frontal and bigonial diameters, sitting height and several other dimensions (tables 1, 2). A Martin-type anthropometer, and sliding and spreading calipers were used. Oberg instructed his students to press the instruments quite tightly over the soft parts in taking a measurement. He periodically checked Onaga's measurements and found they compared very closely with his own.

Oberg suspected that his own location of nasion was low, since he selected the deepest point at the root of the nose. The low means for facial and nasal heights in the Umotina, Nambicuara, and Iranxe series bear out this suspicion. Oberg also felt that perhaps he did not achieve a true minimum in the minimum frontal diameter. This seems likely, since the means of the present series are high for this dimension. Head height was taken with the detached segment of the anthropometer from tragion to vertex. For sitting height, the Umotina subjects were seated on a chair, with their feet on the ground. The Nambicuara and Iranxe sat on a table for the measurement, and presumably had no footrest. In table 1, arm length was calculated by subtracting dactylion height from acromial height; leg length, by subtracting sitting height from stature. The latter, somewhat unorthodox, procedure was used to achieve figures comparable to those of Ranke.

The techniques of the other investigators are more comparable to those of Oberg and Onaga than might be expected. Ehrenreich chose a low location for nasion, on the average of 6 mm. below that of Ranke (1910, p. 95). Judging by Roquette-Pinto's low means for facial and nasal heights (table 1), he also deviated in that direction. It seems most probable that the facial and nasal dimensions measured by Onaga, Ehrenreich, and Roquette-Pinto are closely comparable, although Ranke's higher location for nasion is more in line with orthodox modern procedure. After consulting Ehrenreich, Ranke felt that the only strictly comparable measurements between them were stature, head length, head breadth, bizygomatic breadth, and nasal breadth (Ranke, 1910, p. 98). He considered Ehrenreich's arm lengths overlong and his biacromial breadths overwide, suggesting that Ehrenreich did not get close enough to the bony landmarks. If anything, Oberg's techniques were in the same direction.

TABLE 1.—*Male means for various northern Mato Grosso tribes* [1]

Measurements and indices	Tribe and investigator indicated													
	Iranxe		*Auetí*				*Trumaí*				Paressí		*Bacairí*	
	Oberg		Ranke		Ehrenreich		Ranke		Ehrenreich		Ehrenreich		Ehrenreich	
	No.[2]	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Stature (in cm.)	5	153. 6	24	158. 1	14	159. 9	14	159. 9	7	159. 2	9	160. 5	10	160. 8
Sitting height (in cm.)	5	78. 6	24	81. 3	------	------	14	80. 7	------	------	------	------	------	------
Biacromial breadth (in mm.)	5	34. 2	24	37. 0	14	39. 0	14	35. 5	------	------	9	40. 1	10	37. 7
Arm length (in mm.)	5	70. 3	24	68. 9	14	73. 3	14	70. 5	------	------	9	75. 8	10	74. 0
Leg length (in mm.)	5	75. 0	24	76. 8	------	------	14	78. 8	------	------	------	------	------	------
Head length (in mm.)	5	181. 2	24	185. 6	14	187. 1	14	182. 0	7	179. 0	9	188. 1	10	186. 5
Head breadth (in mm.)	5	143. 4	24	148. 8	14	148. 4	14	149. 0	7	145. 4	9	145. 9	10	147. 0
Head height (in mm.)	5	121. 2	------	------	14	122. 3	------	------	7	126. 1	9	117. 9	10	120. 6
Minimum frontal diameter (in mm.)	5	102. 8	------	------	14	108. 9	------	------	7	105. 2	9	108. 9	10	108. 0
Morphological face height (in mm.)	5	109. 8	24	121. 3	14	115. 6	14	122. 7	7	111. 1	9	116. 9	10	117. 1
Bizygomatic breadth (in mm.)	5	133. 6	24	137. 0	14	134. 2	14	134. 6	7	131. 4	9	135. 7	10	132. 2
Bigonial breadth (in mm.)	5	97. 2	------	------	4	103. 2	------	------	------	------	9	100. 2	10	97. 8
Nasal height (in mm.)	5	48. 2	24	56. 1	4	45. 4	14	55. 3	------	------	9	49. 6	10	47. 5
Nasal breadth (in mm.)	5	39. 4	24	39. 0	4	39. 0	14	40. 4	------	------	9	39. 2	10	39. 6
Length-breadth index	5	79. 2	24	80. 2	14	79. 6	14	81. 9	7	81. 6	9	77. 5	10	79. 0
Length-height index	5	66. 9	------	------	14	65. 3	------	------	7	70. 5	9	62. 4	10	65. 6
Breadth-height index	5	84. 4	------	------	14	82. 2	------	------	7	86. 7	9	80. 8	10	82. 0
Morphological face index	5	82. 1	24	88. 5	14	86. 3	14	91. 2	7	84. 6	9	85. 9	10	88. 2
Nasal index	5	81. 9	24	69. 5	4	76. 1	14	73. 1	7	75. 5	9	79. 2	10	84. 7

TABLE 1.—*Male means for various northern Mato Grosso tribes*[1]—Continued

Measurements and indices	Tribe and investigator indicated															
	Nahuqua				Eastern Nambicuara				*Camayurá*		Bororo				Carajá	
											Umotina		E. Bororo			
	Ranke		Ehrenreich		Roquette-Pinto		Oberg		Ehrenreich		Oberg		Ehrenreich		Ehrenreich	
	No.[2]	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean	No.	Mean
Stature (in cm.)	65	161.8	15	162.1	18	162.0	7	159.6	14	164.3	14	168.0	20	173.7	12	168.9
Sitting height (in cm.)		83.8					7	81.3			14	84.9				
Biacromial breadth (in mm.)	65	37.1	4	39.2			7	35.1	4	40.1	14	36.8	20	41.6	12	37.4
Arm length (in mm.)	65	70.3	5	73.6			7	69.8	14	77.6	14	75.6	20	80.2	12	77.6
Leg length (in mm.)	65	78.1					7	78.5			14	83.0				
Head length (in mm.)	65	185.2	15	188.0	18	184.0	7	178.3	14	184.8	14	196.3	20	190.4	12	191.2
Head breadth (in mm.)	65	147.3	15	151.1	18	140.0	7	138.0	14	146.6	14	142.9	20	154.5	12	142.8
Head height (in. mm.)			15	126.7			7	126.0	14	119.6	14	134.6	20	129.1	12	128.4
Minimum frontal diameter (in mm.)			5	107.6	18	99.0	7	103.4	4	108.2	14	109.1	20	118.3	12	113.3
Morphological face height (in mm.)	65	120.0	15	115.6	16	110.0	7	108.7	14	114.3	14	120.6	20	120.4	12	125.3
Bizygomatic breadth (in mm.)	65	136.4	10	130.5	13	134.0	7	134.6	14	131.9	14	140.3	20	147.2	12	140.0
Bigonial breadth (in mm.)			5	106.8			7	104.3	4	101.5	14	104.6	20	109.3	12	106.7
Nasal height (in mm.)	65	53.1	5	45.4	18	47.0	7	45.6	4	48.2	14	48.6	20	49.0	12	48.4
Nasal breadth (in mm.)	65	40.5	5	39.2	18	40.0	7	38.7	4	38.0	14	42.5	20	42.4	12	41.6
Length-breadth index	65	79.5	15	80.6	18	76.0	7	77.4	14	79.3	14	73.0	20	81.2	12	74.7
Length-height index	65		15	67.4			7	70.8	14	65.3	14	68.7	20	68.1	12	67.7
Breadth-height index			15	83.8			7	91.5	14	81.6	14	94.4	20	83.5	12	89.9
Morphological face index	65	88.0	10	87.1	11	82.5	7	80.9	14	86.7	14	86.1	20	81.8	12	89.5
Nasal index	65	75.4	5	86.3	18	85.0	7	84.6	14	78.6	14	87.6	20	87.2	12	86.2

[1] Upper Xingú Basin tribes are indicated in italics. The linguistic affiliations of the tribes are as follows: Arawak—Iranxe (?), Paressí; Carib—Bacairí, Nahuqua; Tupi—Auetí, Camayurá; independent—Bororo, Carajá, Nambicuara, Trumai.

[2] No.=Number of individuals measured.

The means for the present series are given in tables 1 and 2. Individual measurements are recorded on microfilm filed in the Division of Physical Anthropology, United States National Museum.

TABLE 2.—*Mean measurements, and indices of Umotina, Nambicuara, and Iranxe series*

Measurements and indices	Umotina		Nambicuara		Iranxe
	14 males	8 females	7 males	6 females	5 males
Stature (in cm.)	168.0	155.6	159.6	148.6	153.6
Acromial height (in cm.)	138.8	128.4	130.8	122.1	127.7
Dactylion height (in cm.)	75.5	59.5	69.8	56.6	57.4
Sitting height (in cm.)	83.0	80.8	78.5	76.3	78.6
Suprasternale height (in cm.)	136.9	127.7	129.7	121.2	127.5
Biacromial breadth (in mm.)	368.1	339.9	350.9	310.0	341.6
Chest breadth	295.9	261.5	269.6	244.8	264.2
Chest depth	231.9	197.6	211.3	201.3	200.4
Maximum hip breadth	287.9	260.9	243.3	239.5	242.4
Head length	196.3	183.1	178.3	171.0	181.2
Head breadth	142.9	137.5	138.0	133.5	143.4
Head height	134.6	130.2	126.0	121.2	121.2
Minimum frontal diameter	109.1	105.9	103.4	105.0	102.8
Bizygomatic breadth	140.3	132.9	134.6	126.5	133.6
Bigonial breadth	104.6	98.0	104.3	96.3	97.2
Morphological face height	120.6	110.1	108.7	102.2	109.8
Nasal height	48.6	43.1	45.6	40.7	48.2
Basal breadth	42.5	37.1	38.7	33.2	39.4
Relative sitting height	50.6	52.0	50.8	51.2	51.2
Relative trunk length	32.0	34.0	32.1	32.8	34.2
Relative leg length	49.5	48.0	49.2	48.8	48.8
Relative arm length	45.0	44.4	43.8	44.2	45.8
Relative biacromial breadth	21.9	21.8	21.9	20.9	22.2
Relative hip breadth	17.2	17.5	15.5	16.0	15.8
Thoracic index	78.4	75.4	78.4	82.7	75.9
Length-breadth index	73.0	75.9	77.4	78.2	79.2
Length-height index	68.7	71.1	70.8	71.0	66.9
Breadth-height index	94.4	94.1	91.5	90.7	84.4
Cephalo-facial index	98.2	95.9	97.8	94.5	93.2
Fronto-parietal index	76.6	76.6	74.9	78.7	71.7
Zygo-frontal index	77.8	79.6	76.9	83.0	77.0
Zygo-gonial index	74.6	73.9	77.5	76.2	72.7
Morphological facial index	86.1	83.0	80.9	80.9	82.1
Nasal index	87.6	86.4	84.6	81.7	81.9

APPRAISAL OF PHYSICAL DATA

Metrically, the tribes of the Upper Xingú Basin appear to be much alike (table 1). This is the more surprising since from the small number of subjects in all but Ranke's Nahuqua (Nahukwa) series one would expect unrepresentative samples and divergent mean figures. It is especially noteworthy that, after due allowances for technical differences are made, Ehrenreich's and Ranke's means for the Auetí, Trumai, and Nahuqua are very similar indeed. Taken as a group, the Upper Xingú series have a mean range in stature of 158–164 cm., with the Camayurá the tallest. The mean cephalic indices cluster closely around 80. All Ehrenreich's series are rather low-headed, with means from 82–87 in the breadth-height index. The highest mean (86.7), possibly a real indication of difference (see below), comes from 7 Trumai males. Ehrenreich's mean facial indices are medium, ranging from 84–87, while Ranke's three series have means of 88 and over, and are probably more correct (p. 131). The same is true of the mean nasal indices, which, for Ehrenreich's series range from 75–78, within the medium category; for Ranke's, from 69–75. The similarities between the Upper Xingú series, on this crude metric basis, suggest that they represent a single racial unit, or part of one. But since Ehrenreich

(1897, pp. 90–91), largely on the basis of facial morphology, characterized the Trumai as a people apart, with their closest racial ties probably in the Chaco, they may not properly belong to the Upper Xingú racial unit. Corroborative of Ehrenreich's view is the Trumai claim that they are newcomers from the south (p. 7).

The uncertain status of the Trumai is hardly clarified by Imbelloni and his student, Paulotti, who themselves are not in agreement. Probably on the basis of Ehrenreich's remarks, Imbelloni asserted that the Trumai, along with other "grupos vestigiales" in upper South America—

> are distinguished no less clearly by their biological characters: by a skin color perceptibly darker than their agricultural neighbors, and in a few cases lighter, by more disagreeable and cruder facial features, the nose with fleshy and puffy alae, and above all, by a perceptible difference in stature, since their means cluster around 150 cm., and are even less in tribes free from contamination [Imbelloni, 1948, p. 225; translation mine].

Table 1, however, indicates that the mean stature of the Trumai is closer to 160 than to 150 cm., and that they are no shorter than their Tupi-speaking Auetí neighbors. Furthermore, neither Ehrenreich nor Ranke credit the Trumai with skin pigmentation different from that of the other Upper Xingú tribes. It is therefore apparent that Imbelloni's generalization goes beyond the evidence at hand. Contrary to this generalization, Paulotti (1948, p. 84 ftn.) selected the Trumai, because of their allegedly low stature and round heads, as an example of the Amazónido physical type in the Upper Xingú basin. This type, according to Imbelloni's (1938, p. 238) examples, is a recent arrival in South America most commonly found in Tupí-, Carib- and Arawak-speakers. Yet in the same footnote, Paulotti discussed the presence of residual and archaic populations (Láguido and Fuéguido) in the Western Amazon, whose characteristically low stature and *long* heads crop out most strongly in the Trumai, among others! Now all we know about the head form of the Trumai lies in Ehrenreich's and Ranke's figures. Combining them into one mean cephalic index for 21 males, the result is 81.8, hardly long-headed.

If there is sufficient validity in Imbelloni's (1938, p. 238–239) Amazónido type, the Upper Xingú racial grouping should be part of it. Imbelloni's concept of the Amazónido type was derived from Von Eickstedt's Brazilide type. Unfortunately Von Eickstedt (1934, p. 756) has also confused the picture by considering the Auetí and Nahuqua representative of the Lagide or Lagoid type. Bracketed with the Auetí and Nahuqua are the Carajá and Cayapó, and, further afield, the Botocudo and Alakaluf. In addition, the Bacairí are said to show Pampide influence (Von Eickstedt, 1934, p. 757). But no evidence for this is offered. Meager as the series in table 1 are, it seems preferable to use them as the basis for tentative conclusions rather than to indulge in the risky short cuts of second-hand impressionism.

Metrically, the Paressí series appears to tie in well with the Upper Xingú tribes, except that it is somewhat longer-headed, due possibly to assimilation of longer-headed Nambicuara. Tentatively, then, the Paressí may be included in the Upper Xingú racial unit, especially since Oberg (p. 69) has noted the close similarity of the Paressí to the Bacairí. Possibly the Iranxe would also fit into this unit, although the present sample does not adequately indicate it.

The metric position of the Nambicuara is not wholly clear from the present data. The two Nambicuara series are longer-headed than those from the Upper Xingú Basin, and possibly higher-vaulted (for Oberg's series), shorter-faced and narrower-nosed as well. Their skin color is perceptibly darker than the neighboring Paressí; in fact Oberg stated (personal communication) that when seen together swimming in the river, he could easily sort out the Nambicuara children on this basis. It is quite possible that the Nambicuara represent one of the living groups representative of the Lagoa Santa type (Newman, 1951, p. 90), but confirmation of this must await new findings by Vellard [2] and others.

Oberg (p. 69) has noted the decided contrast between the Upper Xingú and other tribes north of the Planalto do Matogrosense and the "large-framed, coarse-featured" Bororo and Guató to the south. This distinction is probably on a full racial level, as already indicated by Von Eickstedt (1934, p. 731) and Imbelloni (1938, p. 239) who place the latter people with the Pampide or Pámpido type of the Chaco and Pampas.

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[2] Through Imbelloni (1948, pp. 235–236) we learn that in 1939 Jehan Vellard made physical studies on three Nambicuara bands: The Tagamani, a Roosevelt river group, and the Sabane. Mean stature for 12 male Nambicuara measured by Vellard is 162.9 cm.

It is curious that the Umotina series is metrically so different from Ehrenreich's São Lourenço Bororo. The former are considerably shorter-statured,[3] longer- and higher-headed, and absolutely and relatively narrower-faced. In these respects, the Umotina are much closer to the Carajá. Yet Oberg noted that the Umotina were lighter in skin color than the tribes north of the Planalto do Matogrosense, while Ehrenreich (1897, p. 79) considered the Carajá the darkest Indians he saw. Because of this and the following description by Oberg, I am hesitant to link the Umotina with people like the Carajá.

Oberg describes some of the Umotina as having flat Mongoloid faces combined with long heads. These long heads have prominent bun-shaped occiputs; narrow, sloping, pyramidal-shaped foreheads with no frontal bosses; and heavy brow-ridges. The position of glabella relative to nasion was higher than in the other groups he investigated. The upper integumental lip was long. Pronouncedly shovel-shaped incisors were not found. The Mongoloid fold of the eye was absent in some, pronounced in others (pls. 9, *a*, *d*; 10, *b*, *c*). Eye color was dark brown, but lacked the brightness noted in the Nambicuara and Caduveo (p. 85). Wavy hair was common, according to Oberg, but does not appear evident in the photographs (pls. 9, 10). Gray hair was observed only among the old women. Men past middle age showed a tendency for baldness, with recession of the hairline, and thinning of the frontal and temporal hair. Like the neighboring Guató, the old Umotina men had thin but not straggly beards. For this reason the Umotina have been long referred to as "Barbados" by neo-Brazilians.

These descriptions and the metric data suggest considerable physical variability within the Bororo group. Determination of the actual extent of this variability must await further studies.

SUMMARY

While the Upper Xingú tribes under consideration and the Paressí may have had differing racial origins, the physical data collected over the past 50 years suggest that they now form a racial unit. Possibly the Iranxe could be added to this unit, if there were more information concerning them. Largely because Ehrenreich (p. 132) considered the Trumai a people apart, I have hesitated to include them with their Upper Xingú neighbors. The racial unit proposed here seems to fit best as part of Von Eickstedt's Brazilide or Imbelloni's Amazónido groups. It is characterized by short stature and, in the Upper Xingú Basin at least, by an unusually heavy thorax and very muscular upper arms in contrast to less well-developed legs (Ehrenreich, 1897, p. 100). Head form verges on brachycephaly, and vault heights appear rather low for American Indians. Rather narrow faces predominate, and the nose seems medium-narrow, with a straight or convex bridge. Information on unexposed skin color is not available, but chances are that the Upper Xingú Basin people are rather lightly pigmented. Hair form is straight to low waved, with some curly hair, particularly among the Bacairí (Ehrenreich, 1897, p. 81). Bacairí men, however, are said to sometimes use wooden hair curlers (Lévi-Strauss, 1948, p. 327). Face and body hair are said to be sparse (p. 15).

The Nambicuara stand apart from the Upper Xingú Basin people in being longer-headed and possibly higher-vaulted, shorter-faced, and narrower-nosed. They are also perceptibly darker in skin color. There is a good chance that the Nambicuara represent a remnant of an old South American racial strain, possibly linking with Lagoa Santa.

In their greater stature and more rugged bodies and faces, the Umotina, along with other Bororo subtribes, are strikingly different from the more gracile Upper Xingú tribes and the Nambicuara. The Umotina are metrically much closer to the Carajá of the Araguaia River than they are to the São Lourenço Bororo. If the Umotina measurements are no more than slightly influenced by neo-Brazilian admixture, a greater physical variability exists among the Bororo than hitherto has been recognized. Whether the concept of the Pámpido race is sufficiently elastic to include the Umotina is a question best decided by Imbelloni and his coworkers.

Viewed from a geographic standpoint (see map 3), the physical anthropology of the Upper Xingú Basin tribes, the Nambicuara and the Bororo fall into an understandable pattern. The natural barriers forming the Upper Xingú Basin have fostered the formation of a cultural and racial unit, whatever the original differences between the tribes settling there may have been. Probably pertaining to this racial unit are the Paressí to the west. Conceivably the Iranxe, northern neighbors of the Paressí, could be placed in the same unit. West of the Paressí, inhabiting the more inhospitable areas of the Serro do Parecís, are the Nambicuara. With some justification they may be considered an archaic remnant surviving in a refuge area. To the south, across the semiarid Planalto do Matogrosense, and living in the Paraguayan rather than the Amazonian drainage, are the Bororo. Racially their ties are to the south—the Chaco and the Pampas. As far as the data go, there is no reason to believe that this tall, rugged physical type extended north of the plateau barriers which bisect Mato Grosso into northern and southern portions.

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[3] That the São Lourenço Bororo are not a selectedly tall series is suggested by Colbacchini's (1942, p. 142) higher mean stature of 175.0 cm. for an Eastern Bororo group.

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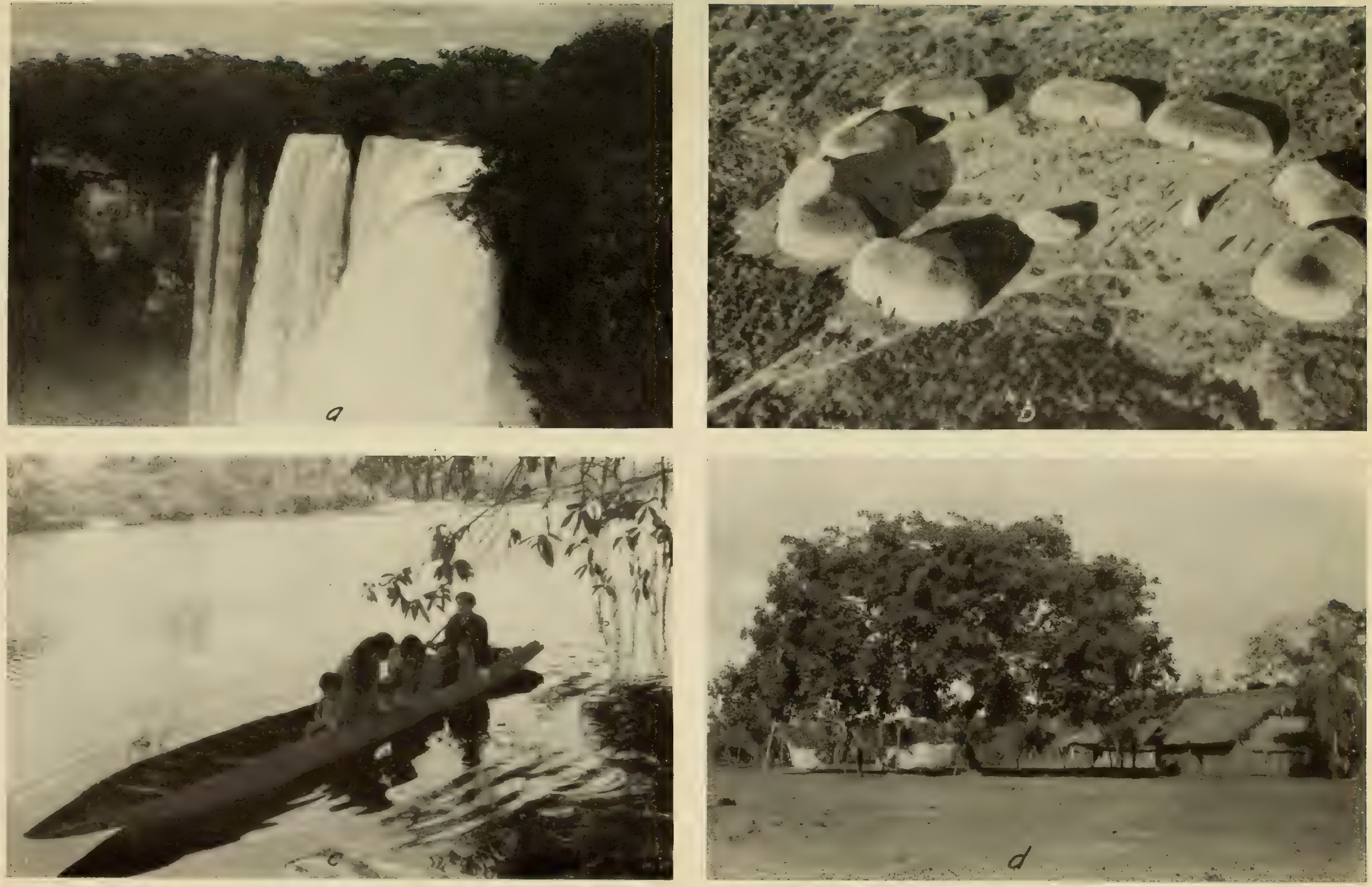

PLATE 1.—**General scenes in Northern Mato Grosso.**—*a*, Utiarity Falls on the Papagaio River. *b*, Upper Xingú village of Cuicúru (air photograph by courtesy of Mr. Harry Wright). *c*, Jatobá bark canoe and Camayurá family on the Kuluene River. *d*, Large piqui tree in Jacarei Camp.

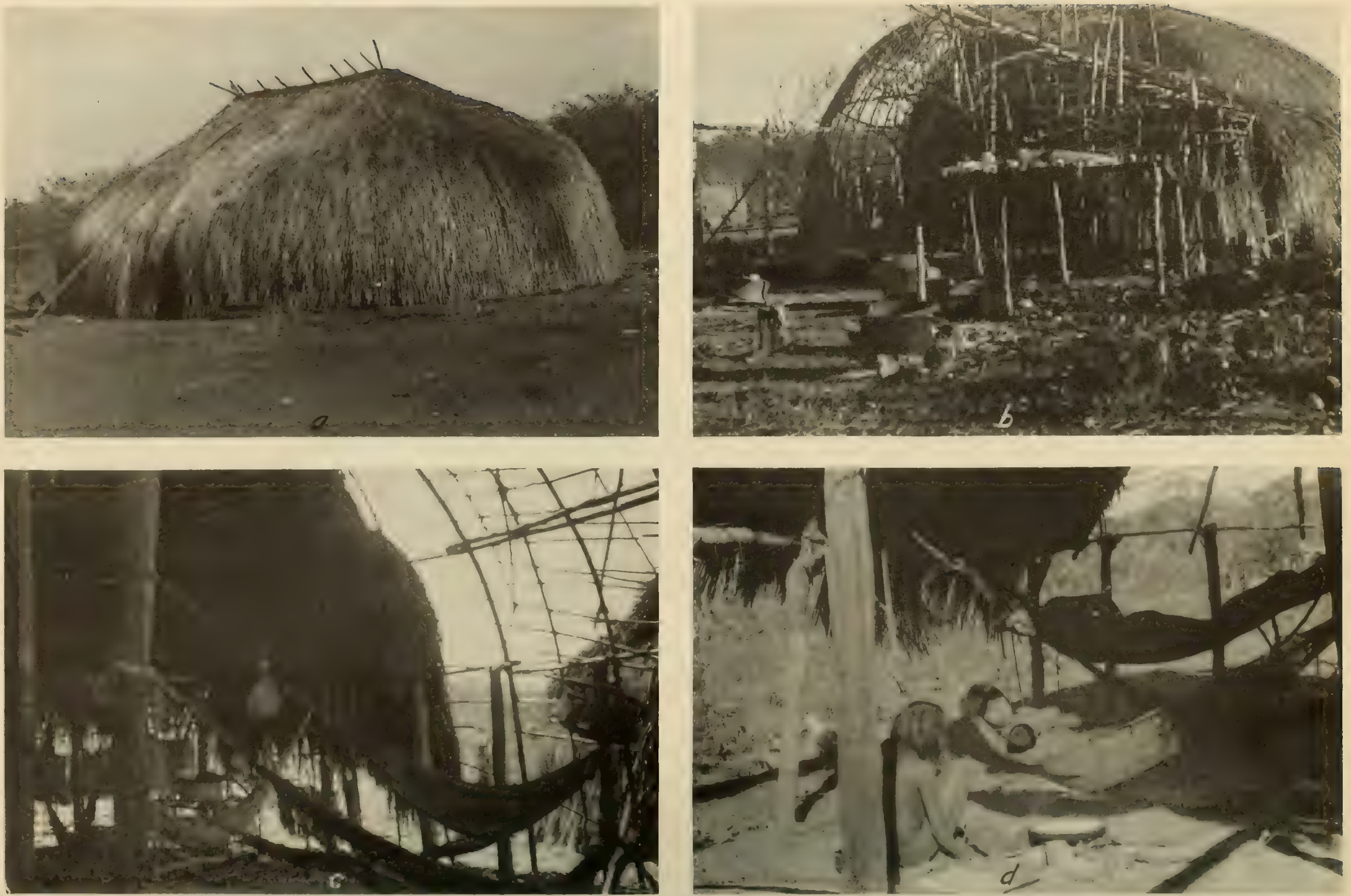

PLATE 2.—**Houses and house construction.**—*a*, Exterior view of completed house shown in *c*. *b*, Partially covered house and large pots. *c*, Interior view of Camayurá house under construction. *d*, The arrangement of hammocks for sleeping in Camayurá houses.

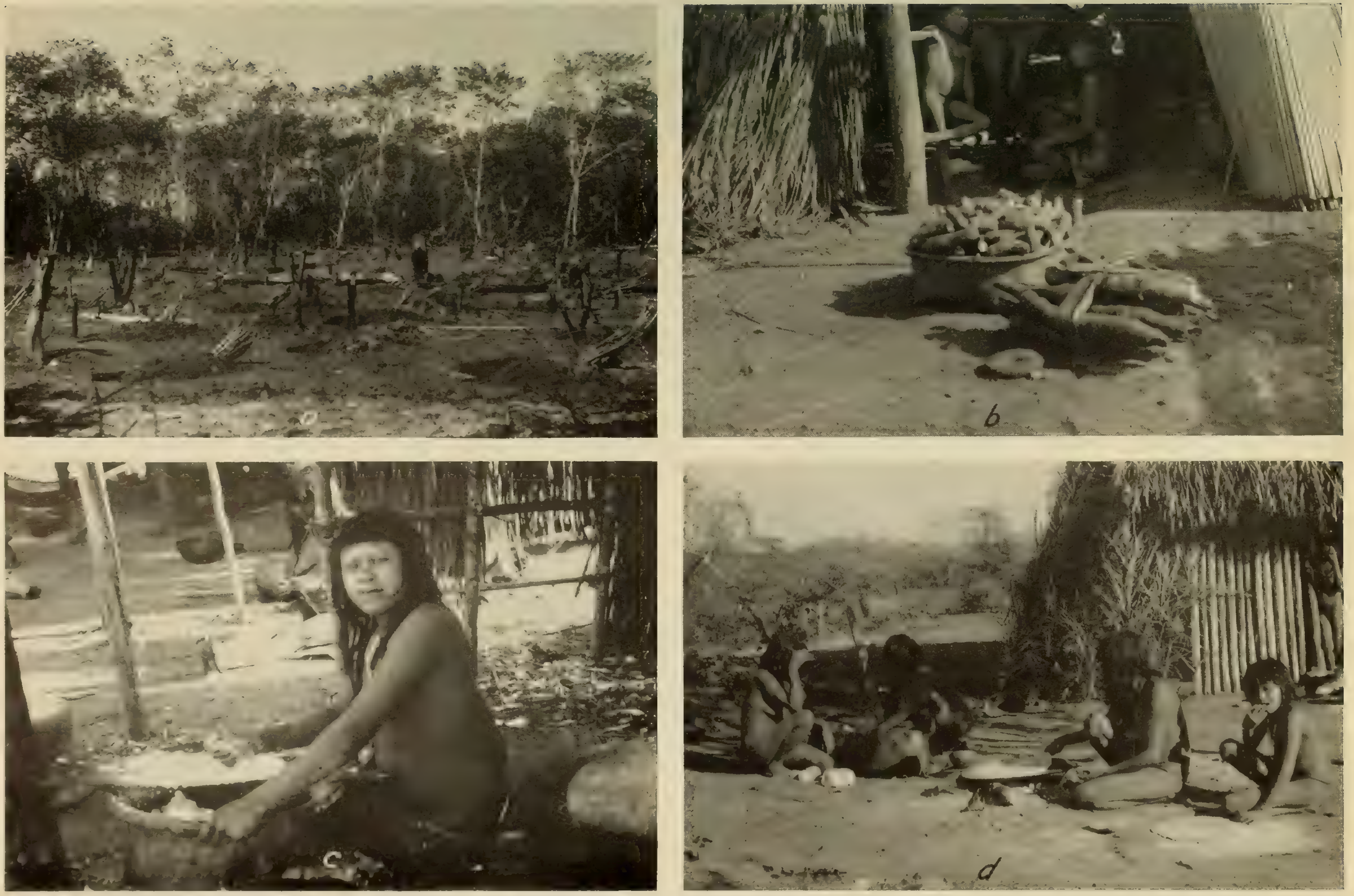

PLATE 3. **Manioc cultivation and preparation among the Camayurá.**—*a*, Newly planted manioc. *b*, Bitter manioc just brought in from the field. *c*, Woman grating manioc over pot. *d*, Woman grinding dried manioc balls while another is baking *menyú*.

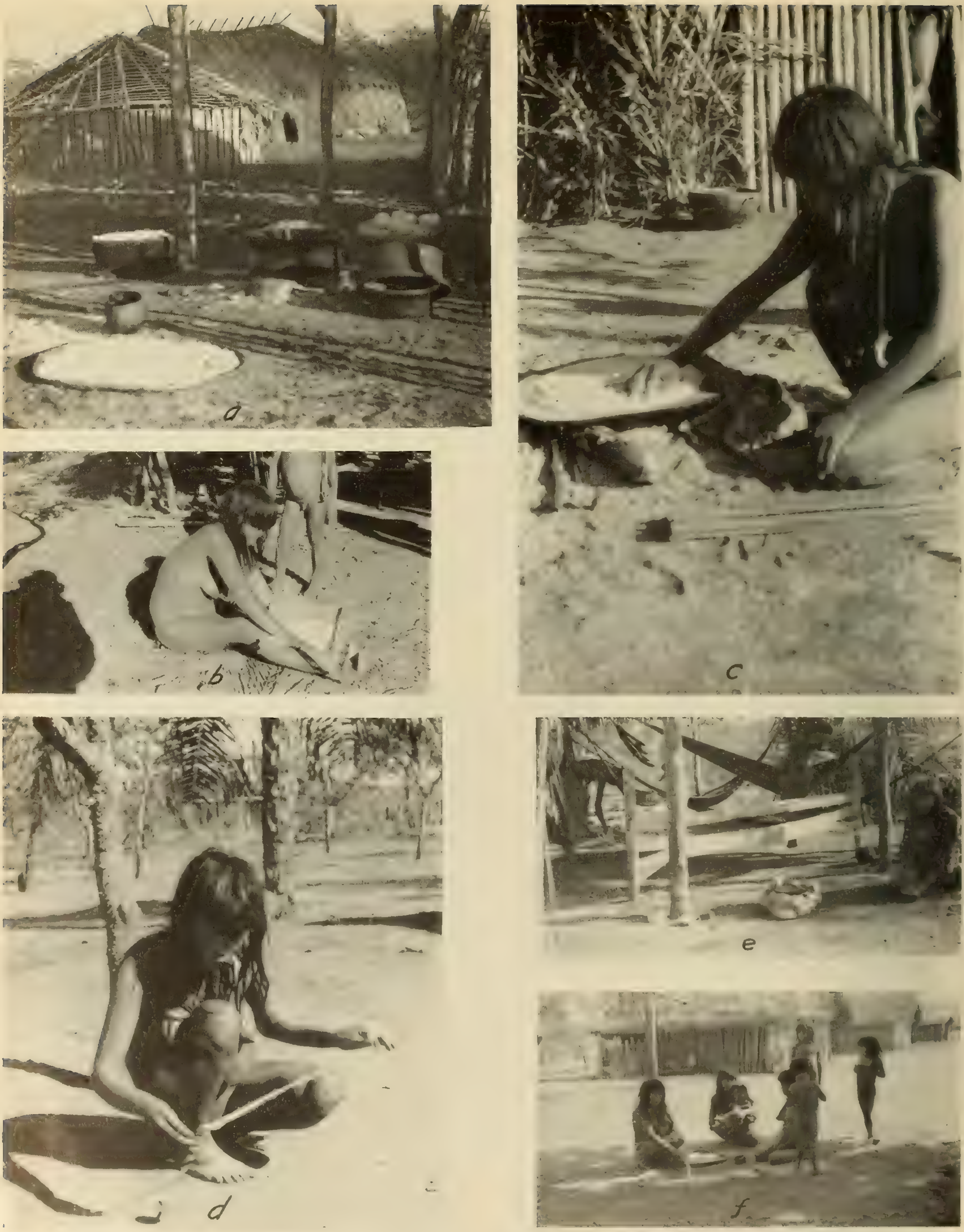

PLATE 4.—**Camayurá women preparing manioc and fibers.**—*a*, Manioc balls drying on flat basket. *b*, Woman sifting ground manioc meal. *c*, Woman spreading manioc meal on baking plate. *d*, Woman spinning cotton. *e*, Woman weaving hammock on two-post frame. *f*, Women preparing buriti fiber.

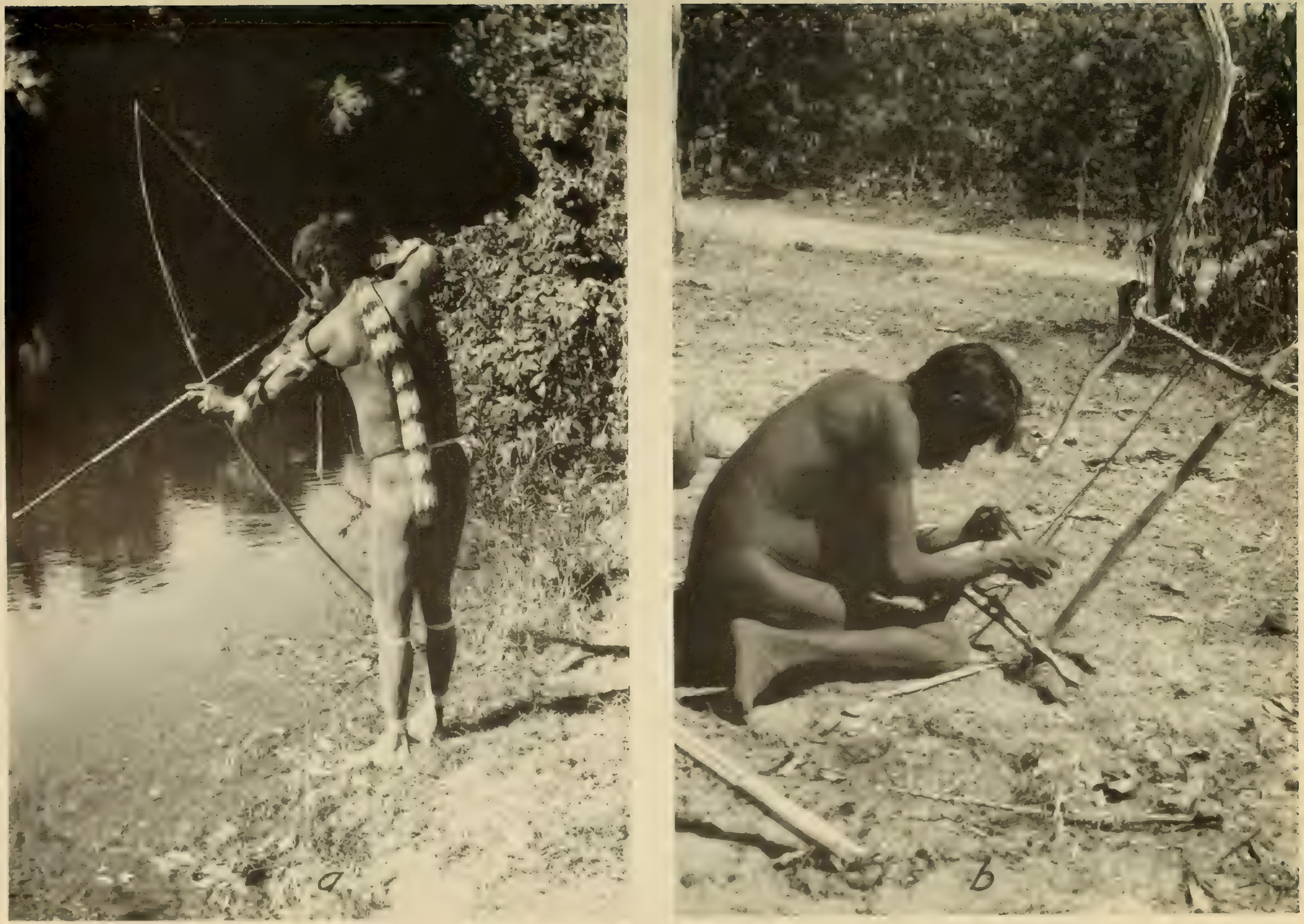

PLATE 5.—**Nambicuara economic activities.**—*a*, Julio demonstrating how fish are shot. *b*, Cascudo weaving cloth for arm bands.

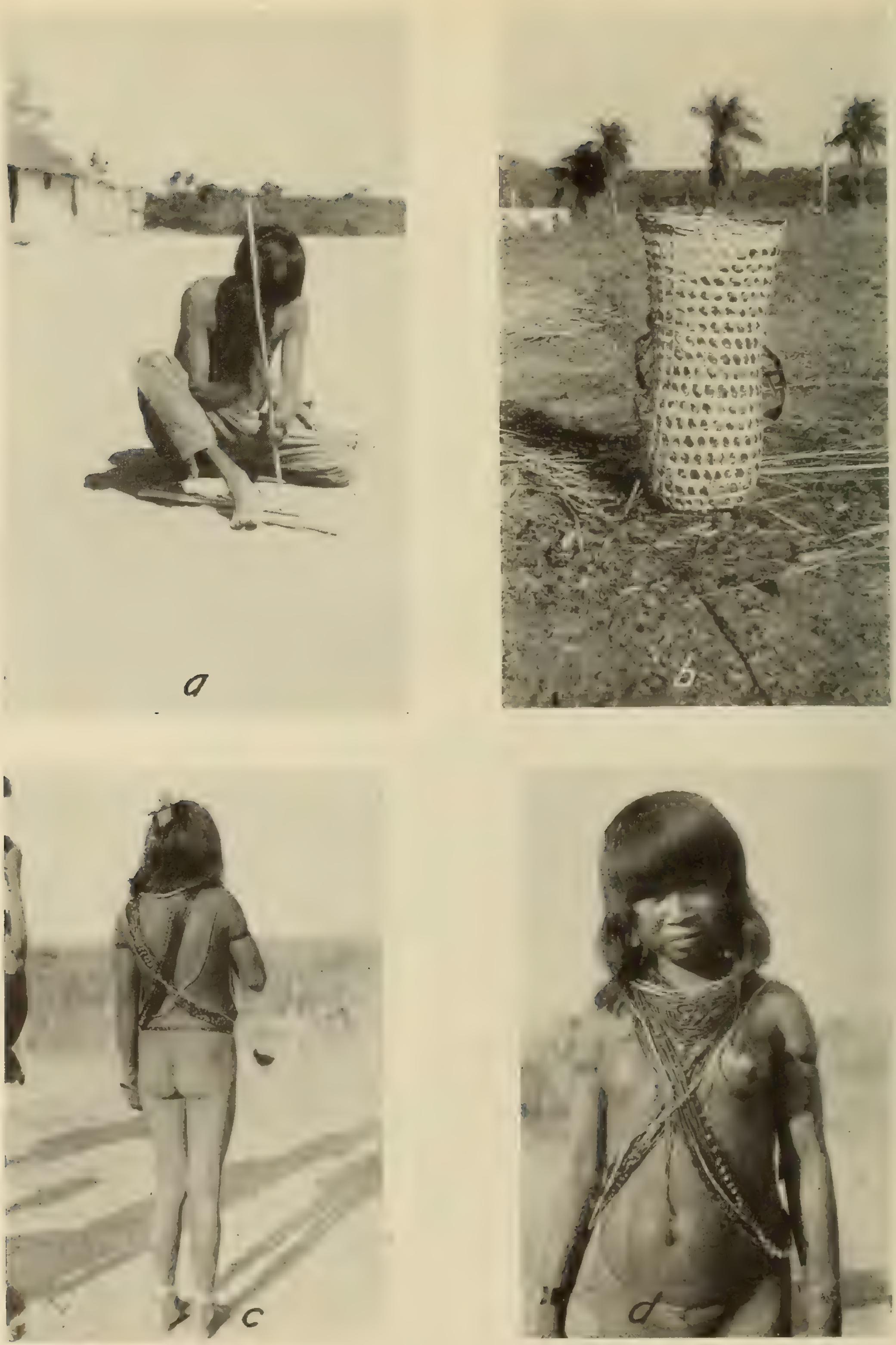

PLATE 6.—**Nambicuara scenes.**—*a*, Cascudo making fire. *b*, Nambicuara burden basket. *c* and *d*, Nambicuara girl with necklaces and painted designs in preparation for puberty ceremony. (By courtesy of Rev. L. Buckman.)

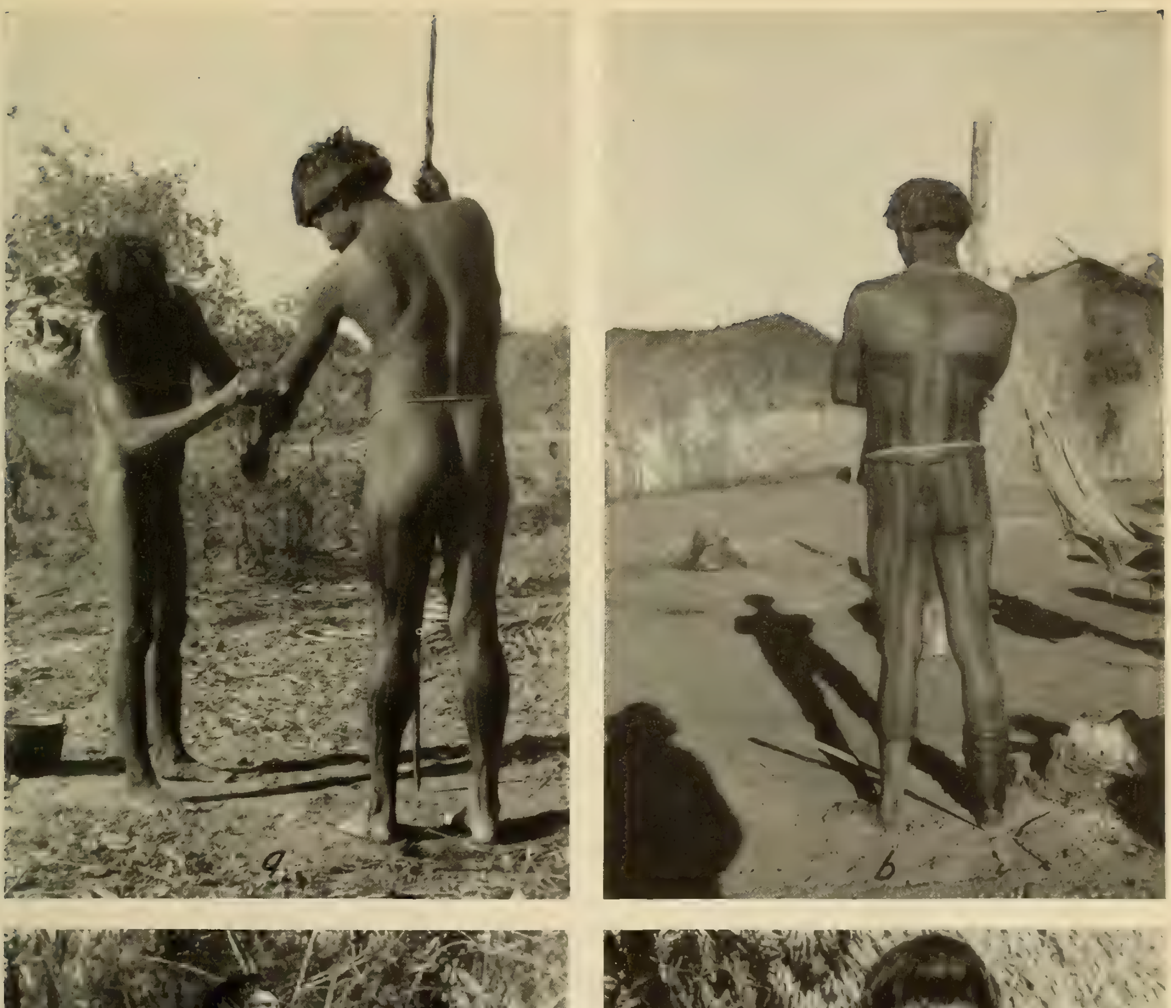

PLATE 7.—Camayurá scenes.—*a*, Man being scarified before undertaking journey. *b*, Man painted with urucú and genipapo in preparation for a dance. *c* Tamapú playing the sacred flute, *jakui*. *d*, Man playing the flute, *kurutai*.

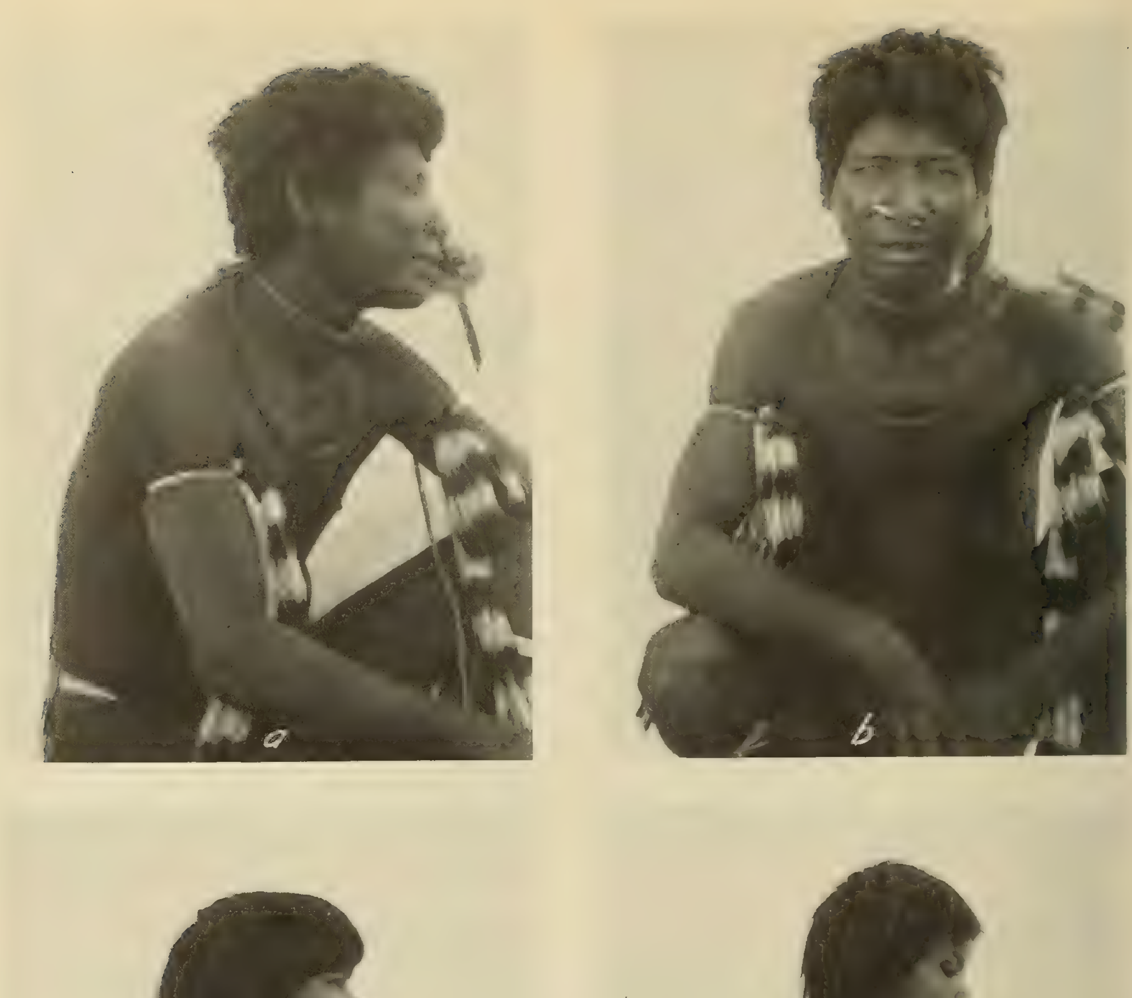

PLATE 8.—**Nambicuara physical types.**—*a* and *b*, Julio, with nose feather lip plug, and burití fiber tassels on arms. *c* and *d*, Julio's wives and child.

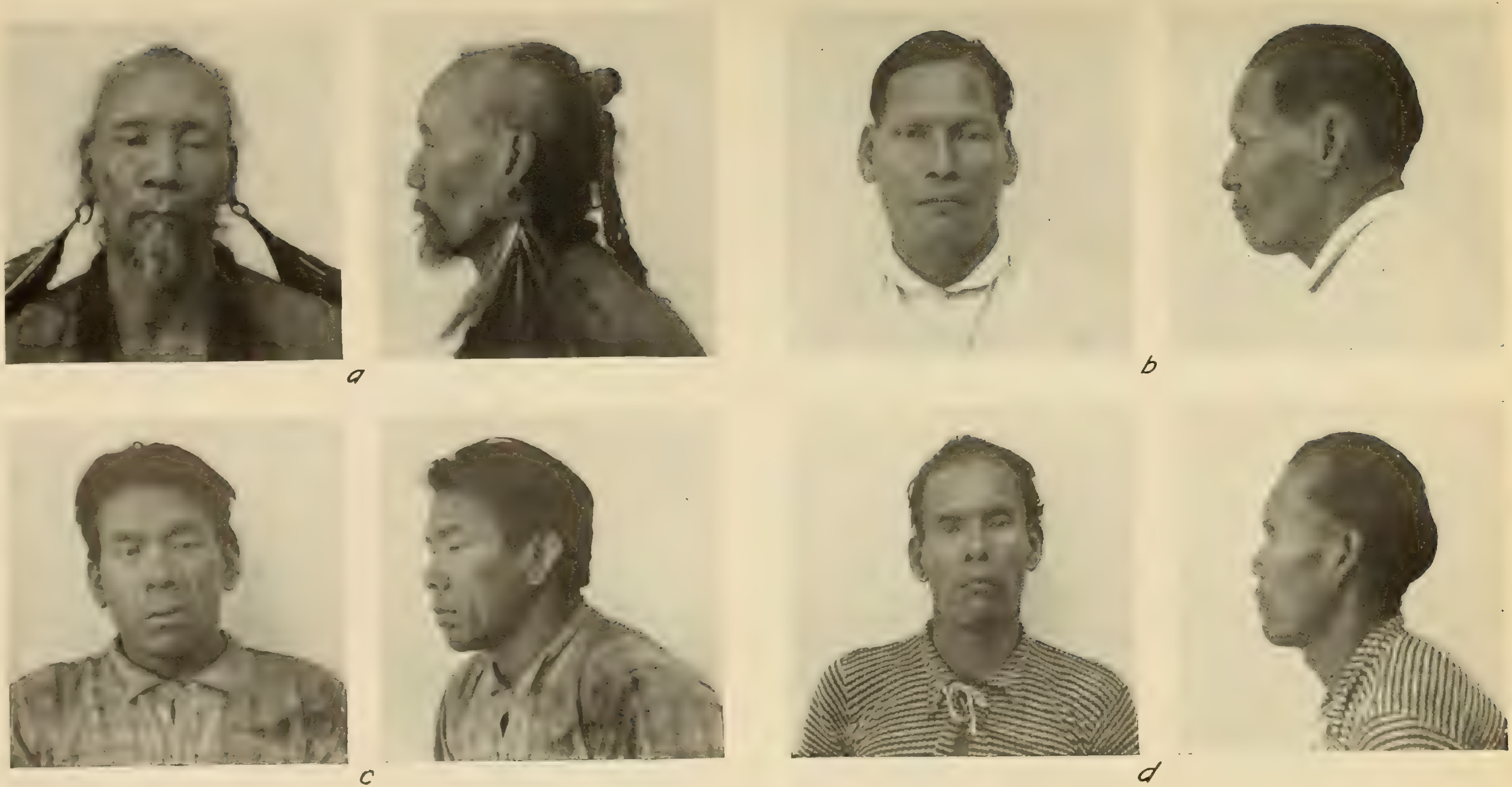

PLATE 9.—**Physical types of Umotina men.**

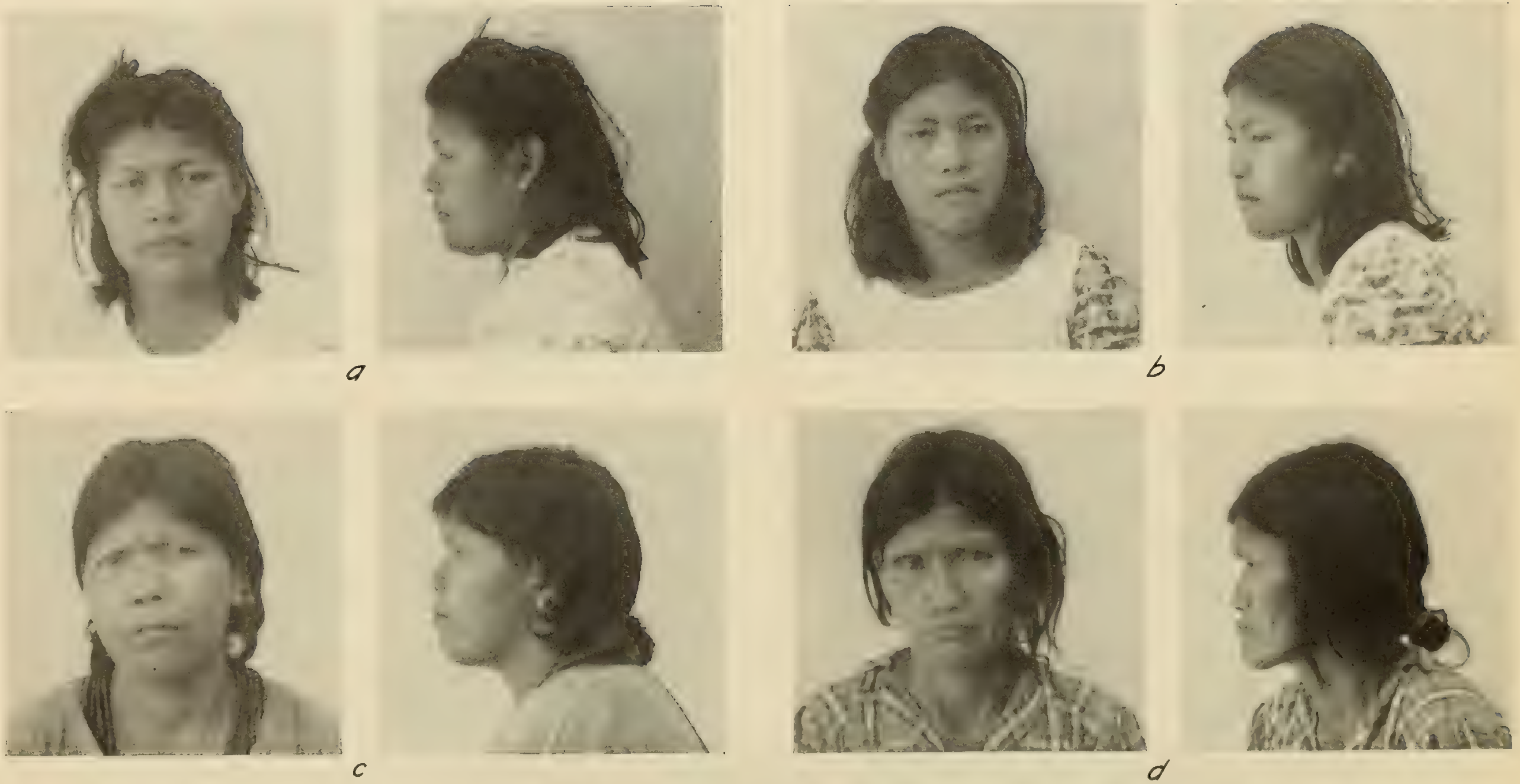

PLATE 10.—Physical types of Umotina women.

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